ORDER NO. VRD-8508-135

Service Manual

Panasonic VHS
PAL

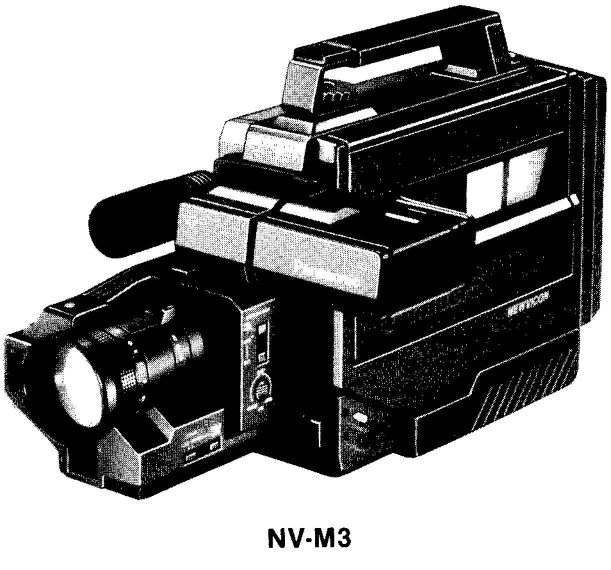
General Description
Adjustment Procedures
Block / Schematic Diagrams
Exploded Views / Parts List

VHS Movie

NV-M3 E EG B

Line Adaptor

VW-KM3E



NV-M3

VW-KM3

Panasonic

Matsushita Electric Trading Co., Ltd.
P.O. Box 288, Central Osaka Japan

INTRODUCTION

By implementing a large number of the latest technological developments from a wide range of diverse fields, Panasonic succeeded in making this new VHS MOVIE NV-M3 a standard in terms of low weight, compact dimensions and overall operation.

This service manual contains these technical information which will allow service technicians to understand and service the Panasonic VHS MOVIE NV-M3, and Line Adaptor VW-KM3. The new NV-M3 features a Automatic Focus system (AF) which automatically adjusts the focus by projecting an infrared beam and receiving it after being refrected by object, a Automatic White Tracking (AWT) which automatically adjusts the White Balance according to the illumination of the scene that is being shot, a new high sensitivity Newvicon Pick-Up Tube that allows making the image even in 10 Lux illumination, 1/2-inch Electronic Viewfinder with playback capability and 6× Power Zoom Lens (F1.4) with Macro capability. Also new 4 rotary heads herical scanning system that achieve complete VHS interchangeability, Cue & Review, Still and Date Recording Function.

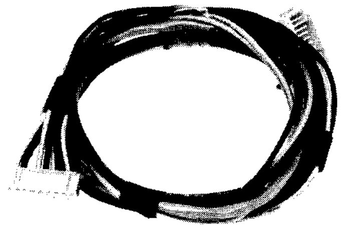
These features in addition to the basic PAL VHS format make the unit an ideal one for your culture and entertainment.

Technical Information

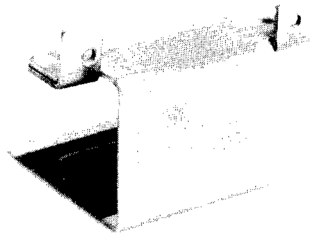
Subject: How to use Servicing Jigs (VFK0302, 0303, 0312, 0304)

We are pleased to inform you to introduce the new "VHS MOVIE" model: NV-M3 in the market. And these servicing Jigs would give you a better and quick servicing, so place an order for these Jigs.

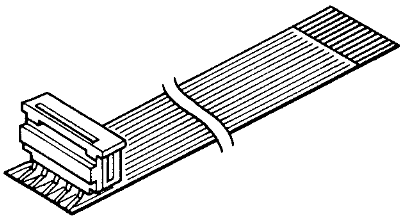
VFK0302: 9-Pin Connection Cable



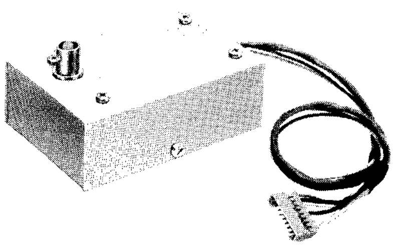
VFK0303: Camera Holer



VFK0312: 10-Pin Connection Cable



VFK0304: Y/C Separator



1. How to use of VFK0302; 9-Pin Connection Cable, VFK0303; Camera Holder and VFK0312; 10-Pin Connection Cable.

In case of camera servicing, especially adjustment or checking for the any foil on circuit board assembly, camera unit has to be removed from video recorder unit.
In this stage, as a camera unit can not be connected to a video recorder unit, it is not able to operate independently. That is why the 9-pin connection cable is necessary.
Besides above, the camera unit is required to fix on the tripod to shoot something like Logarithmic gray scale chart or Color chip chart.
For this purpose, camera holder must be used.
In case of VTR Main circuit board servicing, especially checking for any foil side on circuit board, VTR Main circuit board has to be opened.
In this stage, it is not possible because 1 flexible connector (P1501) is too short.
In order to prevent this, 10 pin connector cable must be used and operation board must be removed from chassis as shown below.

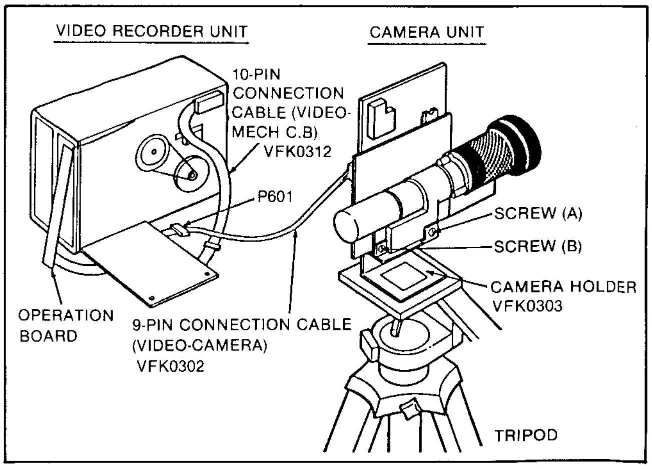


Fig. 1. How to use of VFK0302, 0303, 0312

(1) Remove the Camera unit. (Refer to the Disassembly Method, Removal of Camera unit).
(2) Remove screw (A) and screw (B), and install the camera unit on Camera Holder and fix tightening 2 screws (A) and (B).
(3) Fix this unit to Tripod.
(4) Connect the 9-pin connection cable at P601 (between VTR and Camera).
(5) Open the VTR Main circuit board assembly (refer to Disassembly Method, Removal of Main C.B.A)

(6) Remove the operation board.
(7) Connect the 10-pin connection cable at P1501 (between VTR and Mechanism connection C.B)
(8) Supply the power and push operation ON/OFF switch.

2. How to use of VFK0304; Y/C Separator

Generally, the adjustment for VTR section should be performed by the signal which is coming from camera unit, so all checking and servicing are available by using the 9-pin connection cable (VFK0302), camera Holder (VFK0303) and 10-pin connection cable (VFK 0312).
If you want to check the only VTR section besides camera section by using the Line input signal, Line Adaptor (NV-KM3) has to be used as shown below.
Because this VHS MOVIE can not accept ordinary composite signal, so this signal should be separated into two signals (Luminance and chrominance signal).
For above purpose, Line Adaptor is used, however, Y/C separator (VFK0304) is also provided for same purpose.

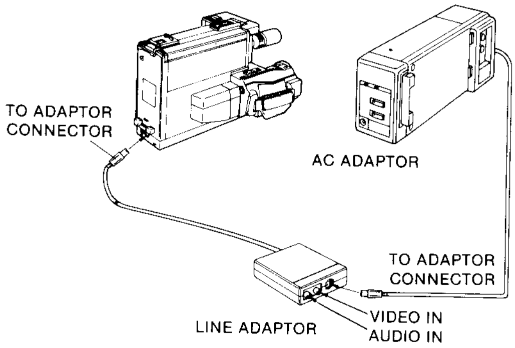


Fig. 2. Connection of Line Adaptor

By using this Y/C separator, easy checking is available whether the camera is OK or recording process is OK or also recording from composite line input.

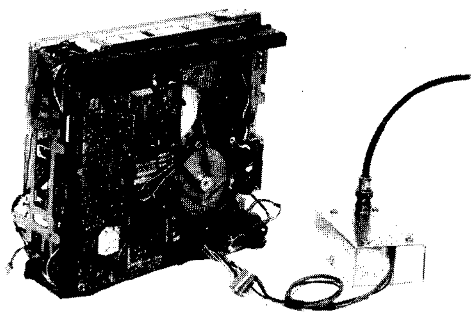


Fig. 3. How to use of VFK0304

(1) Remove the camera unit. (Refer to the Disassembly Method, Removal of camera unit)
(2) Connect the Y/C separator to P601 (VTR side) as shown in Fig. 3.

3. How to Eject Manually

If the electrical circuit is defective the cassette compartment might not eject, or you want to eject the cassette compartment without the electrical power, please push the Eject lever (B) unit after disconnecting the power source.

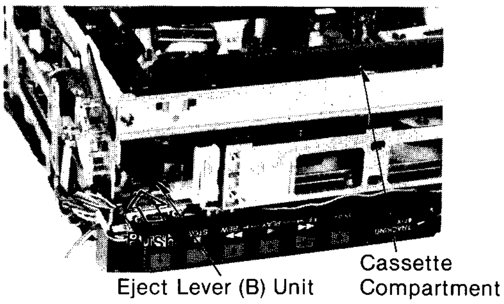


Fig. 4. How to Eject Manually

Note:
(1) This NV-M3 is designed to record only the signal coming from camera, but if Line Adaptor is used, recording from composit line input including dubbing by this model is available.

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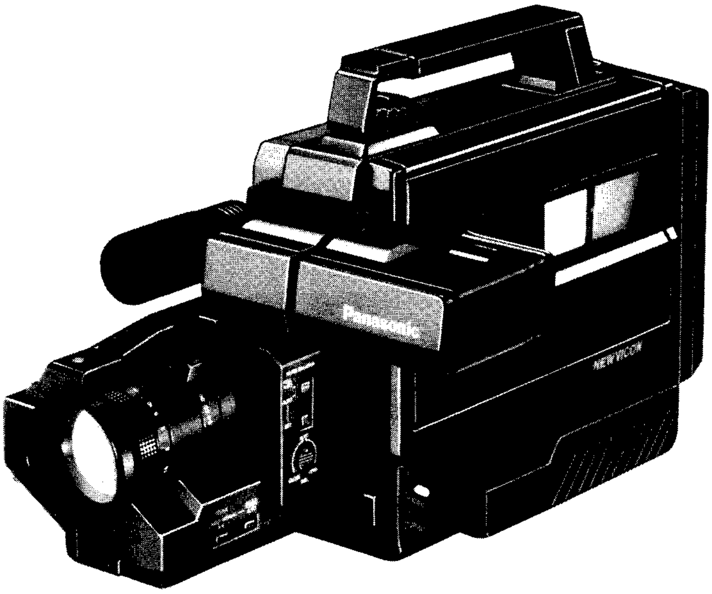
VHS Movie

NV-M3E EG B



SPECIFICATIONS

Power Source:	DC 12V
Power Consumption:	Recording mode: 12V—9.5W (Battery Operation) Stand-by mode: 12V—1.0W (Battery Operation)
Pick-up System:	Single tube frequency separation system
Pick-up Tube:	One high-band (3.9MHz) 1/2″ integral stripe filter NEWVICON tube
Illumination Standard:	1,400 lux
Required Minimum Illumination:	10 lux at F1.4
Microphone:	Unidirectional Electric Condencer Microphone
Lens:	Built-in 6:1 Power Zoom Lens with MACRO Function, Auto/Manual Iris, Auto Focus System F1.4 (9~54mm) Lens Front Diameter 49mm
Viewfinder:	1/2″ B/W Electric Viewfinder with graphic display
White Balance:	Full Auto/Auto White Balance
Camera Mounting:	One 1/4″-20 threaded hole standard camera tripod
Video Recording System:	4 rotary heads, helical scanning system
Tape Speed:	23.39mm/s
Tape Format:	Tape width 12.7mm high density tape
Record/Playback Time:	240min. with NV-E240
FF/REW Time:	Approx. 12.0min. with NV-E180
VIDEO	
Television System:	CCIR: 625 lines, 50 fields PAL colour signal
Modulation System:	Luminance: FM azimuth recording Colour signal: Converted subcarrier phase shift recording
Output Level:	ADAPTOR (Multi): 1.0Vp-p, 75Ω unbalanced
AUDIO	
Input Level:	MIC IN (M3): −70dB, 4700Ω unbalanced
Output Level:	ADAPTOR (Multi): −8dB 600Ω unbalanced
Audio Track:	1 track
Video Horizontal Resolution:	more than 250 lines
Signal-to-Noise Ratio:	Video: more than 43dB Audio: more than 43dB
Audio Frequency Response:	80Hz—8kHz
Operating Room Temperature:	0°C—40°C
Operating Humidity:	10%—80%
Weight:	Approx. 2.8kg (without Battery Pack)
Dimensions:	155(W)×192(H)×324(D)mm (with Viewfinder turned down) (without carrying handle)
Standard Accessories:	1 pc. Carrying Handle 1 pc. Earphone 1 pc. AV Converter connector
Optional Accessories:	Video cassette tape: NV-E240 Approx. 344m, 240min. NV-E180 Approx. 258m, 180min. NV-E120 Approx. 174m, 120min. NV-E60 Approx. 88m, 60min. 1 pc. Battery Pack, VW-VBM3E 1 pc. AC Adaptor, VW-AM1E/EG/B 1 pc. Pause Remote Controller, VW-RM1E Car Battery Cord, VW-ACM1E System Carrying Case, VW-SHM3E Line Adaptor, VW-KM3E

Weight and dimensions shown are approximate.
Specifications are subject to change without notice.

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ELECTRICAL REPLACEMENT PARTS LIST

SECTION 1
GENERAL DESCRIPTION

1. HOW TO USE VHS MOVIE

1-1. FEATURES

1. Auto Focus Function

An auto focus (AF) is based on triangulation method for measuring the distance between the object and camera by projecting an infrared beam and receiving it after being reflected by the object.
The Auto Focus mechanism will then automatically and instantly turn the Focus Ring on the lens for correct focus distance setting.

2. The VHS Movie Uses Standard VHS Video Cassettes

The VHS Movie uses the same video cassette tapes as any VHS-system video recorder, thus assuring complete compatibility and allowing up to 4 hours continuous recording on a single cassette (NV-E240).

3. Playback of Tapes-indoors and Outdoors

The VHS Movie offers not only camera recording but a range of different playback functions as well: normal playback, CUE & REVIEW and Still. Playback is possible via the viewfinder, or a connected TV monitor or a TV set, when using with an AC Adaptor (optional).

4. VHS Movie Camera

The VHS Movie is a tremendously versatile video system for both camera recording and playback in a single unit.

5. Compact, Lightweight and Superportable

With only 2.8 kg (without battery pack) the VHS Movie is extremely lightweight and handy to use.

6. 3-Way Power Supply

The VHS Movie can be operated on three different power sources: rechargeable battery pack (supplied), AC adaptor (supplied) or car battery cord (optional).

7. Full Auto White Balance Adjustment Function

This function automatically adjusts the white balance according to the illumination of the scene that is being shot.

8. Operation Information Centre in the Electronic Viewfinder (EVF)

Easy-to-see indications in the viewfinder inform you of the camera operating conditions during shooting, so you don't have to remove the eye from the viewfinder. The indications include: Date, Memory, Tape Counter, Recording and various warnings.

9. Rec Review Function

After you finish shooting a scene and tape is stopped in the pause mode, press the Rec Review Button. The tape will automatically rewind for a few seconds, and the end of the recorded scene will then be played back to let you confirm that the recording conditions are satisfactory.

10. 6X Power Zoom Lens and Macro Feature

The power zoom lens allows smooth zoom-in and zoomout shots and quick adjustment of the picture angle to anywhere from wide to telephoto.

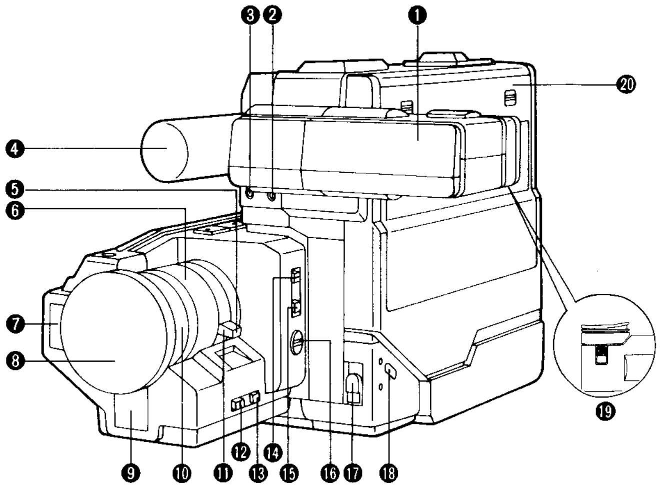
11. Standby Function

Pushing the Standby Button during every stop in shooting lasting more than a few minutes saves power and makes your battery pack last longer.

12. Recording of TV Programs is Possible via a LINE Adaptor (Optional)

By connecting a TV set equipped with separate video and audio output jacks via the LINE Adaptor (VW-KM3, optional) to the VHS Movie, you can simultaneously record a program that is being received on the TV set.

1-2. CONTROL AND COMPONENTS



㉚ Start/Stop Buttons
Press this button once to start recording, and press it again to stop recording.

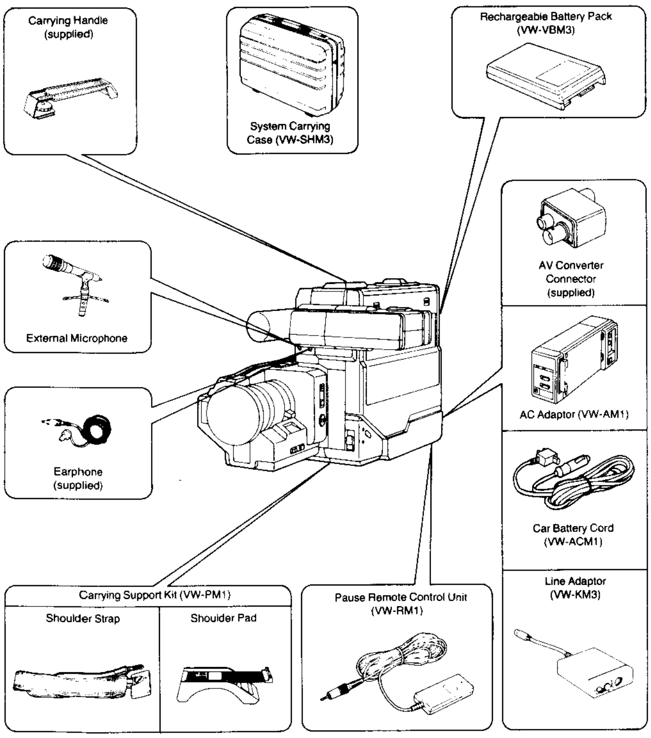
㉛ Grip Belt
This belt can be adjusted to the size of your hand.

㉜ Handgrip

㉝ Power Zoom Control
Press the "W" side of the Power Zoom Control to widen the picture angle.
Press the "T" side of the Power Zoom Control to make the picture angle narrower (telephoto shot).

㉞ Operating Controls.

1-3. VHS MOVIE SYSTEM (OPTIONAL)

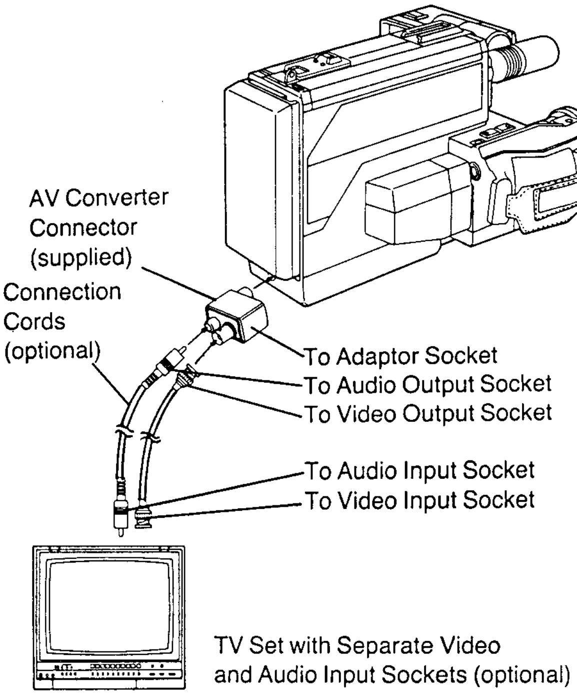

Carrying Handle (supplied)
System Carrying Case (VW-SHM3)
Rechargeable Battery Pack (VW-VBM3)
External Microphone
Earphone (supplied)
AV Converter Connector (supplied)
AC Adaptor (VW-AM1)
Car Battery Cord (VW-ACM1)
Line Adaptor (VW-KM3)
Carrying Support Kit (VW-PM1)
Shoulder Strap
Shoulder Pad
Pause Remote Control Unit (VW-RM1)

1-4. CONNECTIONS

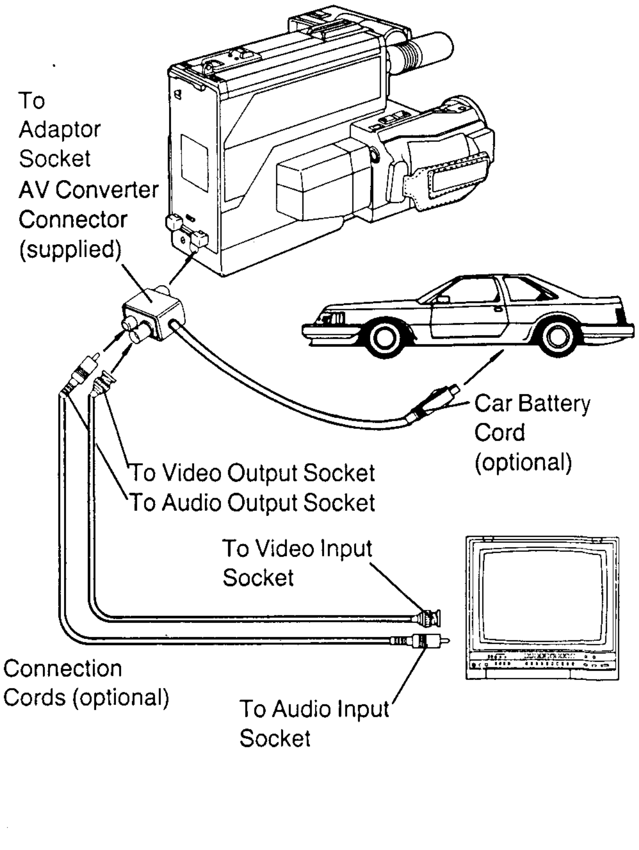
1-4-1. CONNECTIONS TO A TV

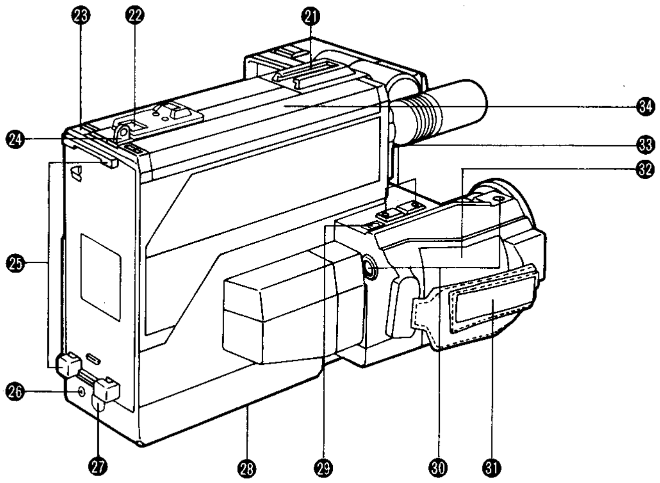
Connection to a TV set with video and audio input sockets.

When using the battery pack as power source:


AV Converter Connector (supplied)
Connection Cords (optional)
To Adaptor Socket
To Audio Output Socket
To Video Output Socket
To Audio Input Socket
To Video Input Socket
TV Set with Separate Video and Audio Input Sockets (optional)

When using a car battery cord as power source:


To Adaptor Socket
AV Converter Connector (supplied)
Car Battery Cord (optional)
To Video Output Socket
To Audio Output Socket
To Video Input Socket
Connection Cords (optional)
To Audio Input Socket



❶ Electronic Viewfinder
This electronic viewfinder (EVF) is a small 1/2-inch black-and-white TV monitor that shows the actual picture being recorded or played back.

❷ Earphone Socket (EAR)

❸ Microphone Socket (MIC)

❹ Built-in Microphone

❺ Macro Button (MACRO)
This button is used for macro close-up shooting.

❻ Focus Ring
Use this ring to adjust the lens focus.

❼ White Balance Sensor Window
The sensor in this window measure the colour of the light and adjusts the white balance.

❽ White Cap
Use this cap when adjusting the white balance.

❾ Distance Measuring Window
An infra-red beam is emitted from and again received by this window to measure the distance between a subject and the VHS Movie.

❿ Lens Hood
This blocks out unwanted external light to the lens.

⓫ Manual Zoom Lever
Use this lever for manual zooming and macro close-up shooting.

⓬ Focus Mode Selector (AUTO/MANUAL)
This selector is used for programming the VHS Movie for automatic or manual focusing.

⓭ Focus Adjusting Button (AUTO)
When the Focus Mode Selector is in the "MANUAL" position, the picture will be automatically focused at every push of this button.
When the Focus Mode Selector is set to the "AUTO" position and you shoot a subject in the far distance, pressing this button will adjust the lens focus to (infinity).

⓮ White Balance Mode Selector (FULL AUTO/AUTO)
This switch is used to select the desired White Balance adjustment mode.

⓯ White Balance Set Button (SET)
When the White Balance Mode Selector is in the "AUTO" position, press this button to adjust the white balance.

⓰ Iris Close/Open Adjustment Control (IRIS)
This control can be used for manually adjusting the lens iris opening to compensate for unusual lighting conditions.

⓱ Operation On/Off switch with lamp (OPERATE)
The lamp lights up when the VHS Movie is turned on.
When condensation has formed inside the VHS Movie, this lamp flashes for a few seconds and the VHS Movie will then automatically switch itself off.

⓲ Standby Button (STAND BY)
This switch is used during longer stops in shooting to save battery power.

⓳ Eyepiece Corrector Control
This control can be used for correcting the eyepiece to your eyesight.

⓴ Cassette Compartment
Press the cassette compartment cover to close it after inserting or removing a video cassette tape.

㉑ Accessory Shoe
The Accessory Shoe is used for attaching a carrying handle.

㉒ Eject Button (EJECT)

㉓ Battery Eject Button (BATT EJECT)

㉔ Metal Fitting for Shoulder Strap
Attach the shoulder strap (optional) to this fitting.

㉕ Battery Holder
It holds the battery pack.

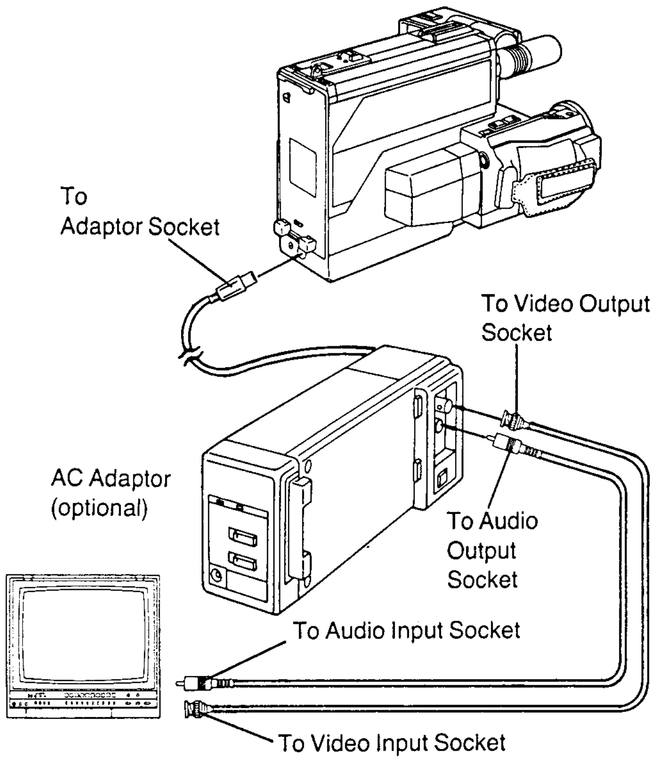
㉖ Remote control Socket (REMOTE)
Connect the pause remote control unit to this socket.

㉗ Adaptor Socket (ADAPTOR)
This connector is used to connect an AC adaptor (optional) or a car battery cord (optional).

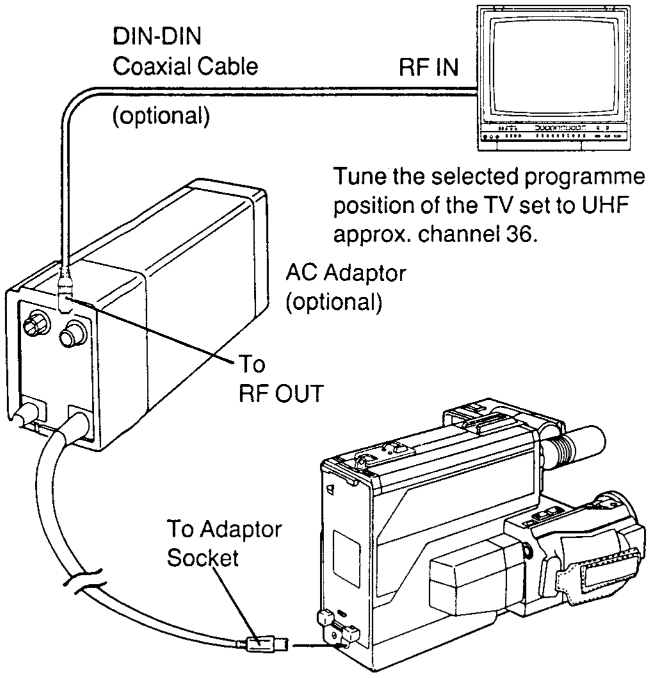
㉘ Tripod Receptacle
This receptacle is used for mounting the VHS Movie on a tripod.

㉙ Rec Review Button (REC REVIEW)
Press this button after shooting a scene for automatic playback of the last few seconds of the recording to confirm that the recording is satisfactory.

When using an AC adaptor:

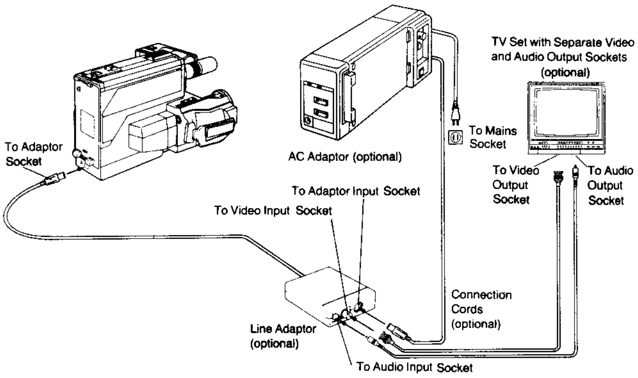

To
Adaptor Socket
To Video Output
Socket
AC Adaptor
(optional)
To Audio
Output
Socket
To Audio Input Socket
To Video Input Socket

connection to a TV set without Video and Audio Input sockets.
An AC adaptor is required.
*Refer to the Operating Instructions of the AC adaptor for detailed information.


DIN-DIN
Coaxial Cable
(optional)
RF IN
Tune the selected programme position of the TV set to UHF approx. channel 36.
AC Adaptor
(optional)
To
RF OUT
To Adaptor
Socket

Recording of to programs via Line Adaptor (optional).

- By connecting a TV set equipped with separate video and audio output jack via the Line Adaptor (VW-KM3, optional) to the VHS Movie, you can simultaneously record a program that is being received on the TV set


TV Set with Separate Video and Audio Output Sockets (optional)
To Mains Socket
To Adaptor Socket
AC Adaptor (optional)
To Video Output Socket
To Audio Output Socket
To Adaptor Input Socket
To Video Input Socket
Connection Cords (optional)
Line Adaptor (optional)
To Audio Input Socket

1. Use the TV channel selector on the TV set to select the programme that you wnat to record.

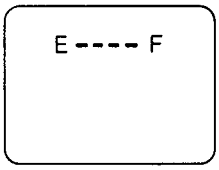
2. Press the Play Button while keeping the Rec/Play Button pressed.
   - To release the Standby mode and to put the VHS Movie back in the recording pause mode, press the Standby Button.

3. Press the Stop Button to finish the recording.
   - Do not turn off the TV set while recording a TV programme, if it is turned off, nothing will be recorded from that moment on.
   - While recording a TV programme, the EVF cannot be used for monitoring.
   - When the Line adapter is being used, if is not possible to record sound via an ecternal microphone.
   - It is possible to record TV programmes for a maximum of about 2 hours when using the Battery Pack (VW-VBM3) as power supply. however, it is better to use the AC Adaptor (VW-AM1) for long recordings.

1-5. EVF (ELECTRONIC VIEW FINDER) INDICATION

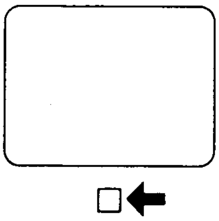
The following indications are displayed in the Electronic Viewfinder (EVF) to inform you of the operating conditions of the VHS Movie.

1. Remaining Battery Power Indication



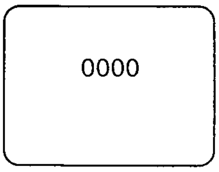
The "---" indications begin to disappear from right to left as the power of the battery pack weakens. When three "---" marks have disappeared, the warning indication "BATTERY" will be displayed.
*This indication will not be recorded on the tape.

2. Recording Indication Lamp



This lamp is lit during recording. Make sure that this lamp light up when pressing the Start/Stop Button to start a recording.

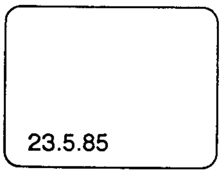
3. Tape Counter Indication



The displayed number changes according to the tape movement.
The tape counter operates even when the figures are not displayed in the EVF. When the VHS Movie is turned off, the tape counter is reset to about "0000".

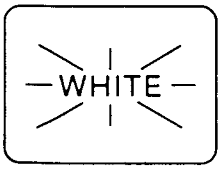
- This indication will not be recorded on the tape.

4. Date Indication

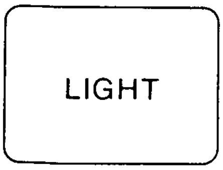


The month, date and year are displayed. It is possible to record this indication.

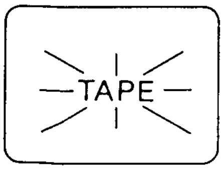
5. Warning/Alarm Indications



The white balance needs to be adjusted.

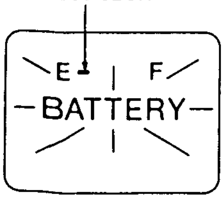


The light level is insufficient. Additional lighting is required or the recording should be made in a brighter place.

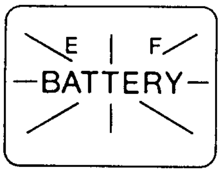


It is impossible to record because the erasure prevention tab of the cassette is not intact.

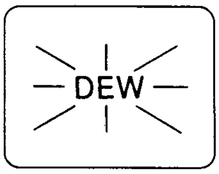
Remaining Battery Power Indication



There is little battery power left. The VHS Movie will turn itself off in a few minutes. Replace the battery pack.



There is no battery power left. The VHS Movie will turn itself off in a few seconds.

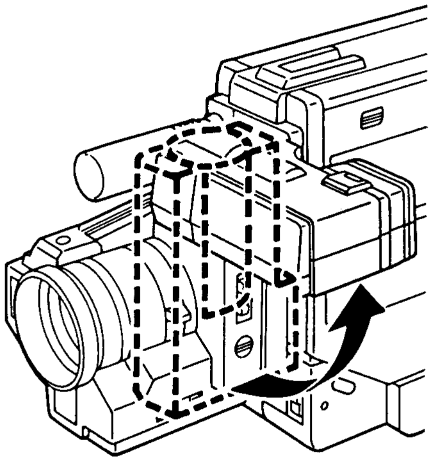


When condensation has formed inside the VHS Movie, the "DEW" indication in the EVF will flash and a few seconds later, the unit will turn itself off to protect the tape and the video heads.

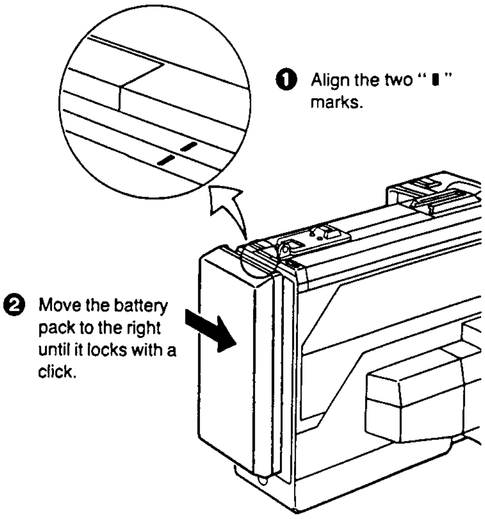
- Some warning indications may blink alternately to warn you of each of the conditions they indicate.

1-6. CAMERA RECORDING

1. Adjust the Electronic Viewfinder (EVF) in the horizontal position.

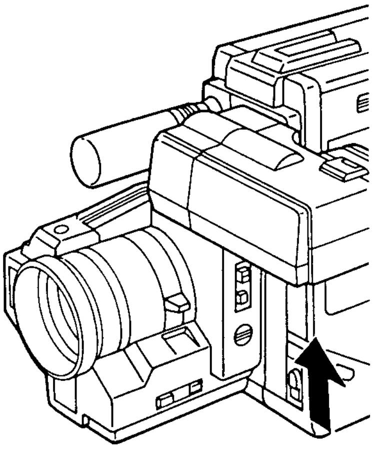


2. Attach a fully charged battery pack.

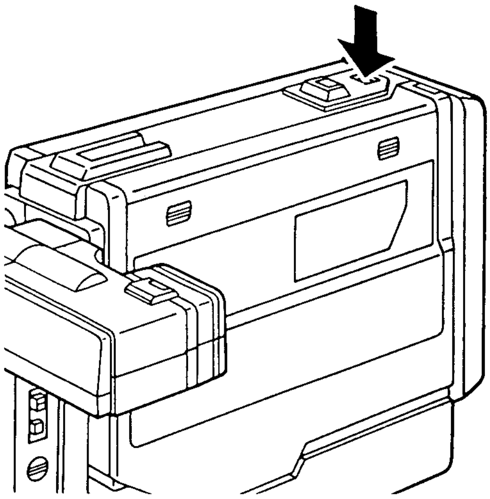

❶ Align the two " ▮ " marks.
❷ Move the battery pack to the right until it locks with a click.

3. Slide the Operating On-Off switch upward to turn the VHS Movie on.

- The corresponding lamp is should be lit.
- To turn the VHS Movie off, slide the operation On/Off switch upward again.

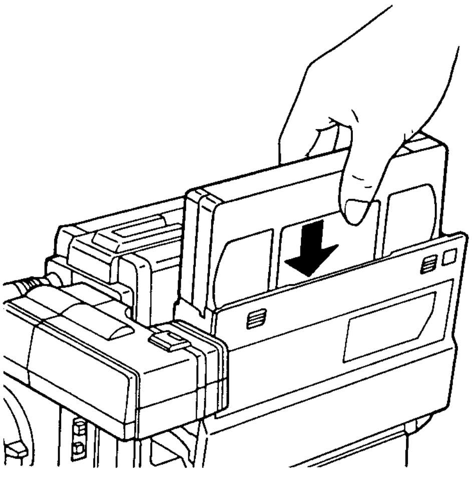


4. Press the Eject Button to open the cassette compartment.



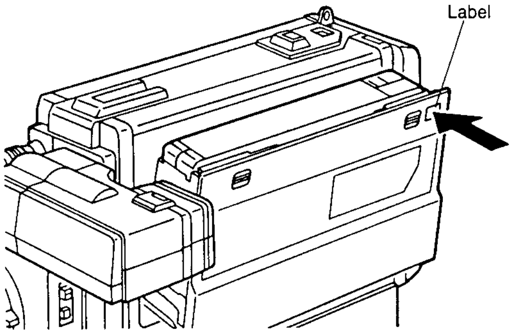
5. Insert a video cassette with the erasure prevention tab intact.

- The window side of the cassette should face outside and the arrow mark point downward.



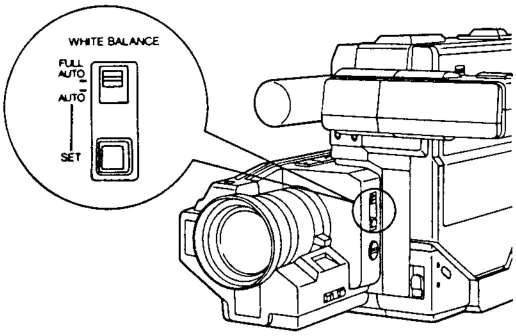
6. Press the cassette compartment cover until it locks with a click.

- A few seconds later, the VHS Movie will change over to the recording pause mode.



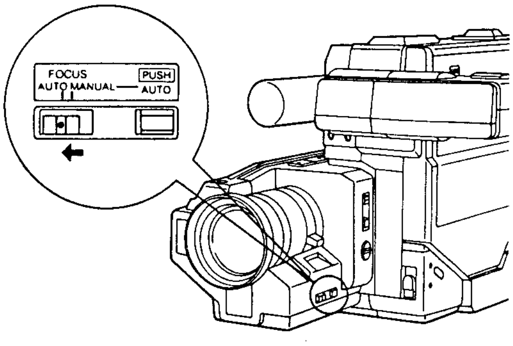
If the VHS Movie is left in the pause mode for more than 6 minutes:
The VHS Movie will automatically switch over to the standby mode (viewfinder is off) to protect the tape and save battery power. To switch over to the recording pause mode (viewfinder is on) again, press the Standby Button.

7. Set the White Balance Mode Selector to "FULL AUTO" position.



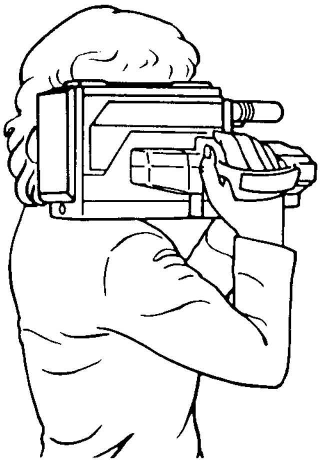
The Full Auto mode may not be able to provide correct white balance adjustment. To obtain exact white balance in such cases, adjust as described in "Adjusting the White Balance in the AUTO Position"

8. Set the Focus Mode Selector to "AUTO" position.



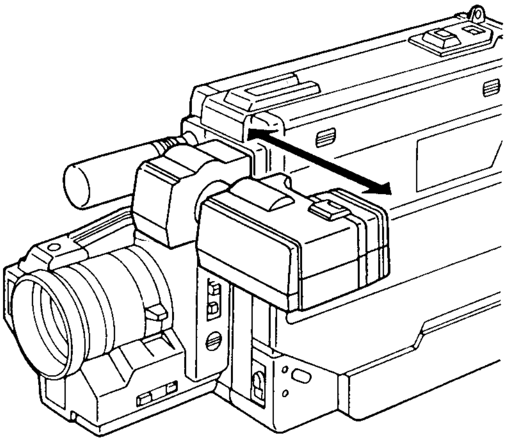
The Auto Focus system will not be able to provide exact focus adjustment under some shooting conditions. In such cases, adjust the focus in the Manual Mode as described in "Focusing in the MANUAL Mode".

9. Place the VHS Movie on the shoulder to get ready for shooting.

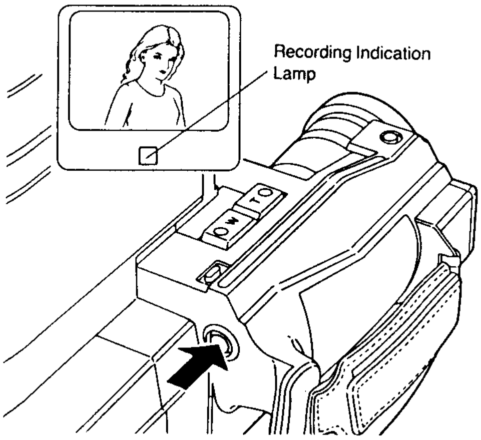


- Grasp the Handgrip and adjust the length of the Grip Belt (Velcro tape closure) to the size of your hand.

10. Pull the EVF outward and adjust for most comfortable viewing.

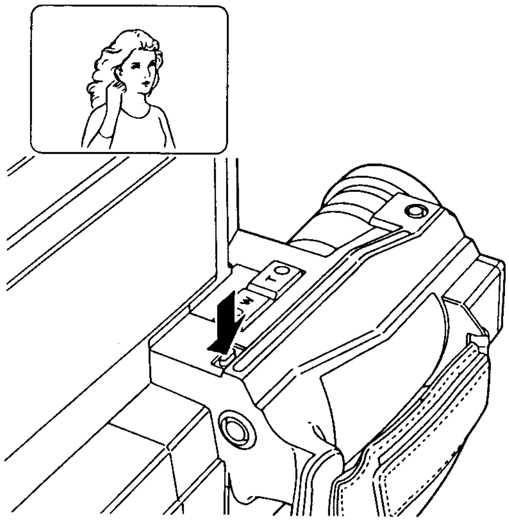


11. Press the Start/Stop Button.
- The Recording Indication Lamp in the EVF lights up and the recording starts.
- When the Start/Stop Button is pressed again, the lamp goes out, recording is stopped and the VHS Movie is in the recording pause mode.



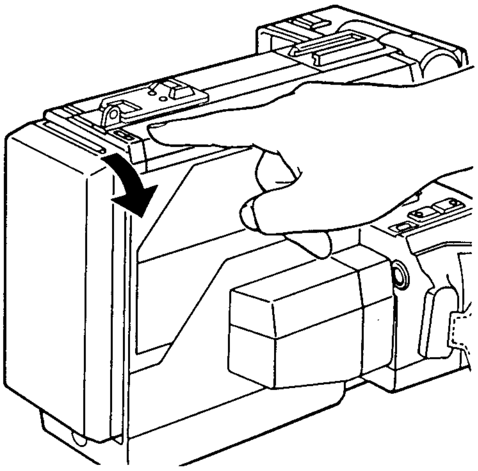
- When the tape reaches its end during recording, the VHS Movie automatically switch over to the stop mode.

12. Press the Rec Review Button while the VHS Movie is in the pause mode.
- The last 2 seconds of the recorded scene are played back and the VHS Movie will again stop in the recording pause mode.

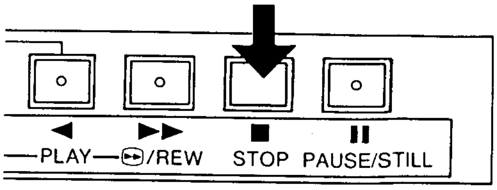


1-7. CAMERA PLAYING BACK

1. Open the comer of the operating control compartment on top of the VHS Movie.

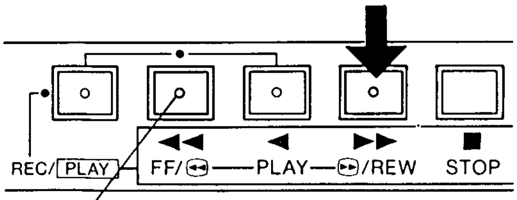


2. Press the Stop Button.



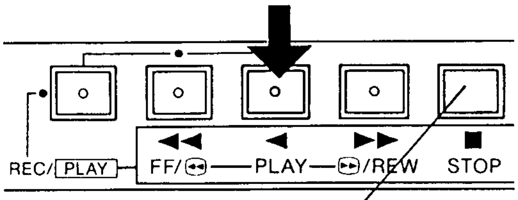
- When the VHS Movie is in the stop mode during use with the AC adaptor (optional) as power source, it will remain on as long as the AC adaptor is on.
- When the VHS Movie is in the stop mode than 6 minutes when the rechargeable battery pack or the car battery cord (both optional) is used as power source, it will automatically switch over to the standby mode to save battery power.

3. Press the Rewind/Review Button to rewind the tape.
- The tape will stop automatically at the beginning of the. tape.



To wind the tape forward rapidly, press the Fast Forward/Cue button.
- The tape will rewind automatically when it reaches its end.

4. Press the Play Button.
- The playback starts.
- The tape will rewind automatically when it reaches its end.



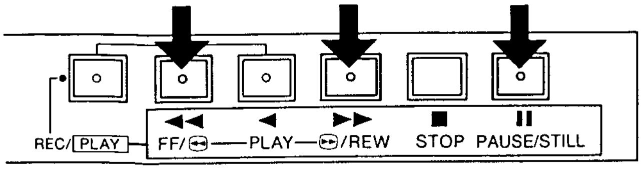
To stop the playback,press the Stop Button.

5. Special playback.
Cue Playback

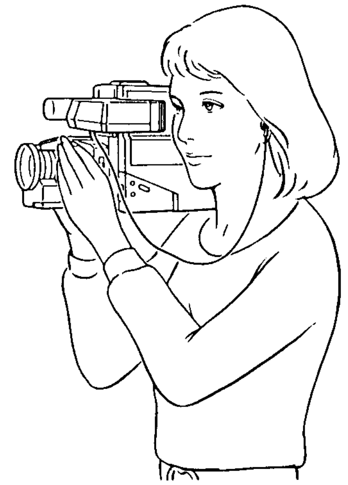
When the Fast Forward/Cue Button is kept pressed while the VHS Movie is in the playback mode, the tape will be played back in forward direction at about 3 times normal playback speed.

Review Playback
When the Rewind/Review Button is kept pressed while the VHS Movie is in the playback mode, the tape will be played back in reverse direction at about 3 times normal playback speed.

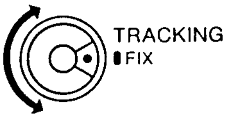
Pause/Still Playback
When the VHS Movie is in the playback mode, press the Pause/Still Button to view a still pecture. To continue the normal playback, press this button again.



- It is possible to watch the picture in the Electronic Viewfinder (EVF).
It is also possible to listen to the sound by using the earphone (supplied).



Tracking adjustment Control

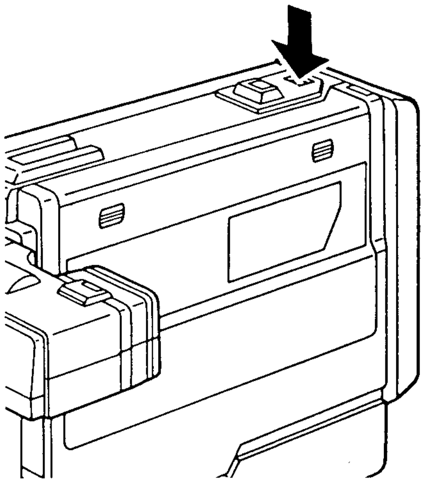


- When the playback picture contains distortions as shown in the picture above,they can be eliminated by turning this control.
- When playing back a tape recorded on another video recorder, it may not be possible to completely eliminate these distortions.

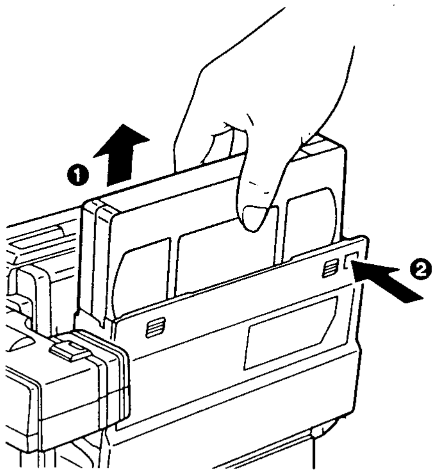
A tape recorded on a VTR in the LP mode cannot be played back on the VHS Movie. (If playback is attempted, it may be stopped automatically.)

AFTER FINISHING PLAYBACK

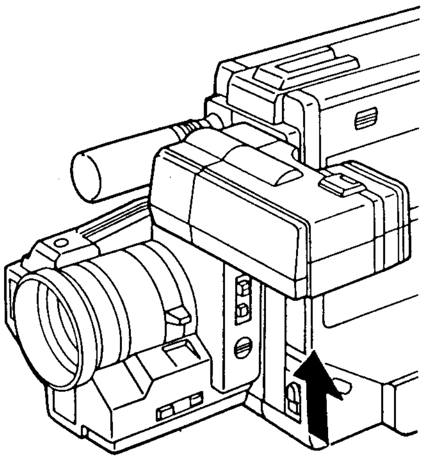
Press the Eject Button.
- The Cassette Compartment Cover will open in about 10 seconds after the tape has been retracted into the cassette.



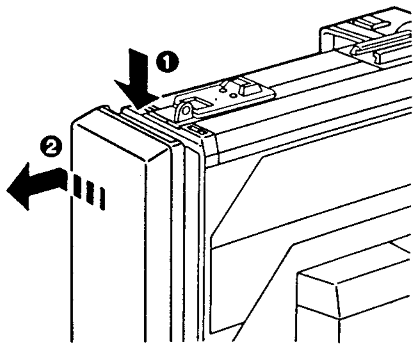
Take out the video cassette and press the cassette compartment cover to close it.



Slide the Operation On/Off Switch upward to turn the VHS Movie off.



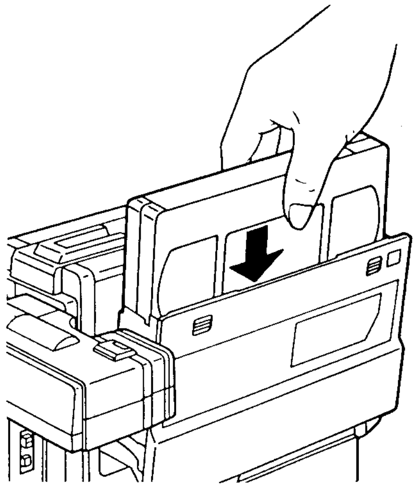
Keep the Battery Eject Button pressed and move the battery pack to the left.



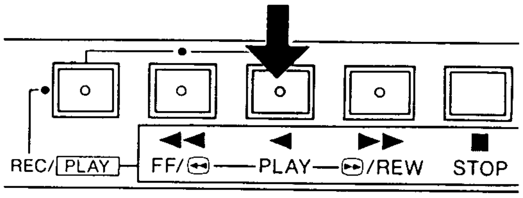
- When the battery pack is removed during recording or playback, the tape remains wound around the head cylinder in contact with the video heads and may become damaged. Therefore, be sure to turn the VHS Movie off before removing the battery pack.
- Be sure to recharge the battery pack before storing it.

PLAYBACK OF A VIDEO, CASSETTE WITHOUT ERASURE PREVENTION TAB.

Slide the Operation On/Off Switch upward to turn the VHS Movie on. Then, press the Eject Button to open the cassette compartment cover.



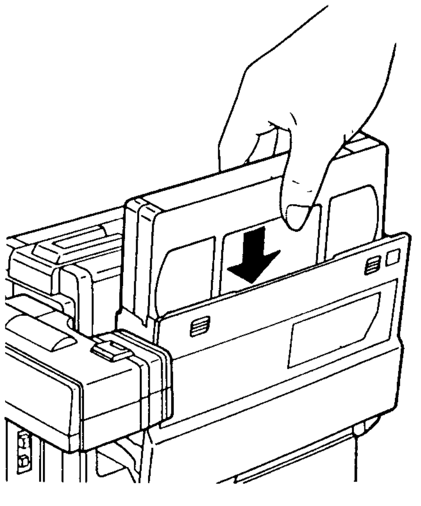
Press the Play Button to start the playback.



- The REC/PLAY indicator flashes until the Play Button is pressed.

PLAYBACK OF A VIDEO CASSETTE WITH THE ERASURE PREVENTION TAB INTACT.

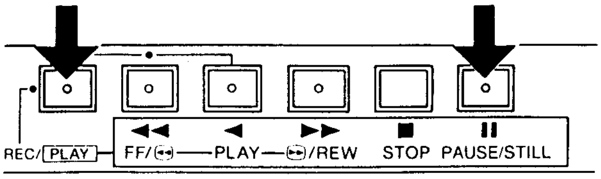
Slide the Operation On/Off Switch upward to turn the VHS Movie on. Then, pres the Eject Button to open the cassette compartment cover.



Press the REC/PLAY Button

- The VHS Movie is now in the still playback mode.

Press the Pause/Still Button to start the playback.



1-8. CAMERA SHOOTING

1-8-1. SHOOTING PROCEDURES

Befor shooting

The colours of the pictures recorded on the VHS Movie differ according to the colour temperature under which the shooting is done. The VHS Movie-like any video camera-responds differently depending on the weather or the time, even under the seemingly same sunlight. The adjustment necessary to assure natural colour rendition is called "white balance adjustment". Adjust the white balance to the light source before every shooting start.

White Balance Setting

- To assure recordings with natural colours, be sure to adjust the white balance whenever the VHS Movie is turned on and when the light source is changed.

- For best white balance adjustment, it is recommended that the "AUTO" setting mode be used.

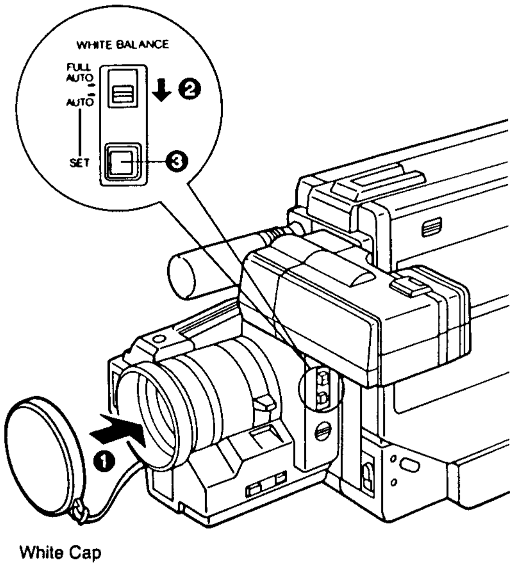
- The white balance adjustment should not be made immediately after turning the VHS Movie on. For very precise white balance adjustment, wait several minutes, before adjusting it.

- Readjust the white balance whenever the lighting changes (e.g. when the shooting location is changed from indoor to outdoors, or vice versa) or after turning the VHS Movie off and on again. It is also possible to compensate for the changing lighting conditions by using a suitable filter.

- When shooting under sunlight,the white balance setting is to be performed with the white cap on the lens exposed to sunlight, and when shooting in the shade, the white balance setting must be made with the VHS Movie in the shade.

- The white balance adjustment should be done with the Iris Close/Open Adjustment Control set to the centre click position.

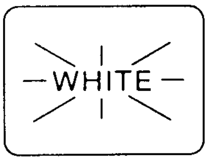
ADJUSTING THE WHITE BALANCE IN THE AUTO POSITION.



❶ Place the White Cap over the lens. If you don't have the White Cap with you, aim the VHS Movie at some white object and zoom in on it so that it fills the entire picture.

❷ Set the White Balance Mode Selector to AUTO.

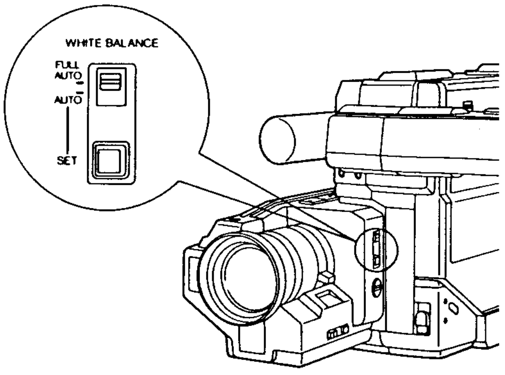
❸ Press the White Balance Set Button.



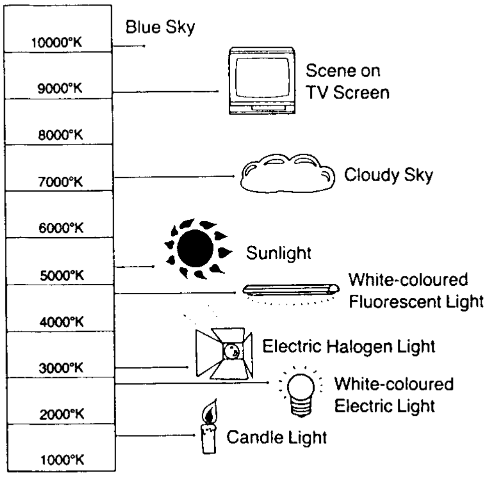
After adjusting the white balance, the blinking "WHITE" indication in the EVF will disappear.

ADJUSTING THE WHITE BALANCE IN THE "FULL AUTO" MODE.

Set the White Balance Mode Selector to "FULL AUTO" position.



COLOUR TEMPERATURE OF THE LIGHT SOURCE.



The mature of the light is called colour temperature and Kelvin (Degree Kelvin) is the unit used to measure it. The higher its value becomes, the more the colour turns to blue, and the lower it becomes, the more it turns to red.
(The colour temperature is not directly related to the brightness.)
Colour temperature range in which adjustment is possible.
FULL AUTO Mode 2800-5600Degree Kelvin
AUTO Mode 2500-7800Degree Kelvin

CAUTIONS
In the Full Auto mode, the sensors built into the front the VHS Movie detects the colours of the illumination of the scene and automatically adjusts the white balance. In the following shooting conditions, the Full Auto mode may not provide exact white balance adjustment. Use the Auto mode in such cases.

1. When the illumination of the subject is different from the light that falls on the VHS Movie.
2. When either the VHS Movie or the subject is n the shade.
3. When extremely bright light sources are used, such as mercury-vapor lamps, natrium lamps or some types of fluorescent lamps.
4. When the illumination is not bright enough (if the brightness on the sensor window is less than 7 lux).
5. When the scene has strong red-coloured illumination, e.g. during sunrise and sunset.
6. When there is some other light source that is outside the sensing range of the white balance adjustment sensors, e.g. snowy landscape, cloudy weather, incandescent light and candle light.
7. When there is some object placed in front of the sensor window that prevents light from reaching it.
8. When shooting in the macro range, the Full Auto mode does not operate. therefore, use the auto mode to adjust the white balance.

1-8-2. AUTO FOCUS FUNCTION

An infra-red beam is emitted continuously through the lens of the VHS Movie, and the Auto Focus system determines the distance and immediately adjusts the lens focus based on the angle at which the beam is reflected back to the Distance Measuring Window.
For special effects and special shooting conditions, focusing in the manual mode is also possible.

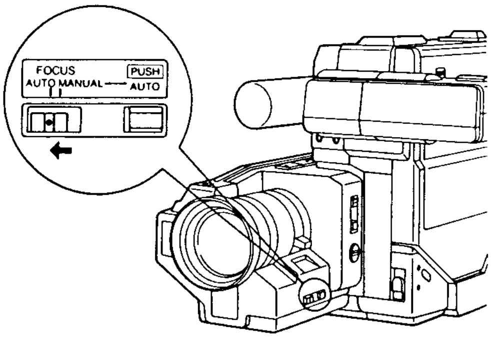
AUTO FOCUS OPERATING MODE.

- When the Battery Pack or the Car Battery Cord is used as power source, the Auto Focus will operate only in the recording and recording pause modes, in order to save battery power.
- When the AC Adaptor is used as power source, the Auto fOcus function will also operate in the stop mode even without a cassette inserted.

FOCUSING IN THE AUTO MODE.

Set the Focus Mode Selector to "AUTO".

- While watching the picture in the EVF, aim the VHS Movie at the subject on which you want to focus.



CAUTIONS

1. When the Auto Focus mode is used durind, shooting, do not turn the Focus Ring and take care not to cover the Distance Measuring Window.
2. When strong light enters the Distance Measuring Window, the Auto Focus system will not be able to function precisely.
3. The focus will be adjusted on the subject in the centre of the picture.
4. When using the Macro function, the focus must be adjusted manually, because the Auto Focus does not operate in the extreme close-up range.
5. To save battery power,keep the Focus Mode Selector in the "MANUAL" position except during actual shooting.
6. The Auto Focus system will not be able to function precisely when special-effect lenses or filters are used, therefore, adjust the focus manually in such a case.
7. To obtain correct Auto Focus adjustment, the diameter (reflection surface) of the aimed at subject must be larger than 6 cm when shooting from a distance of 3 meters.

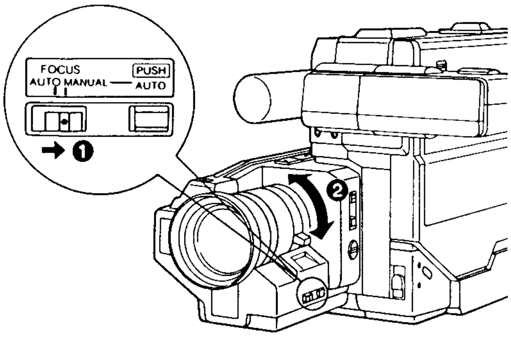
8. If some infra-red wireless remote control unit is directed at the Distance Measuring Window during Auto Focus operation, inexact focus adjustment may result.

In the followimg shooting conditions, the Auto Focus system will mot be able to provide stable and exact focus adjustment. In such a case, set the Focus Mode Selector to "MANUAL" and adjust by hand with the Focus Ring.

1. Shooting a subject through glass.
2. Shooting a subject with a part of it near and another part far from the VHS Movie.
3. Shooting under adverse environmental conditions such as dense fog, snow, rain, cigarette smoke, etc.
4. Shooting a flat subject such as a wall or poster at an angle.
5. Shooting a continuously moving subject such as a crowd of walking people.
6. Shooting subjects that do not easily reflect infra-red rays, such as black surfaces or water.
7. Shooting subjects with shiny suifaces.
8. Shooting subjects with the border between upper and lower parts having strong contrast being in the centre of the EVF.

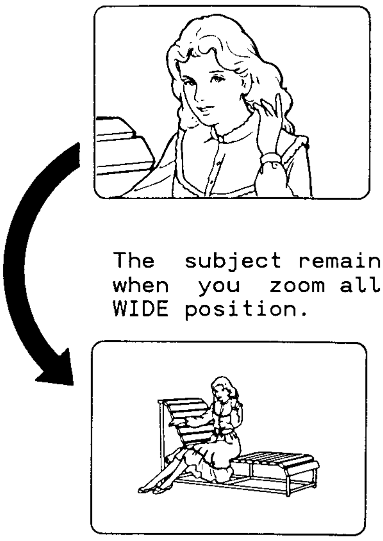
1-8-3. FOCUSING IN THE MANUAL MODE, ADJUSTING FOCUS RING

❶ Set the Focus Mode Selector to "MANUAL".
- Zoom in on the subject until et fills the entire picture.
- Turn the Zoom Ring all the way to the TELE position.



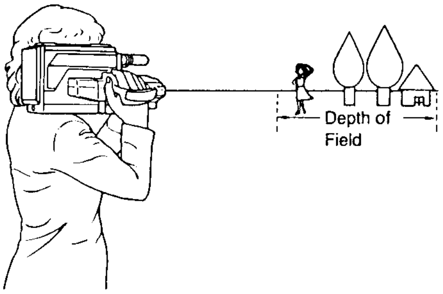
❷ Turn the Focus Ring to adjust the focus. It is possible to zoom in on the subject by pressing the T-side of the Power Zoom Control.
When the Auto Button is dept depressed while the Focus Mode Selector is in the MANUAL position, the Focus will be adjusted automatically as long as this button is pressed.

- Be sure to zoom in on the subject to adjust the focus.



The subject remains in focus even when you zoom all the way to the WIDE position.

DEPTH OF FIELD.



Depth of field is the range of distances within which objects are in focus i.e. are sharp.

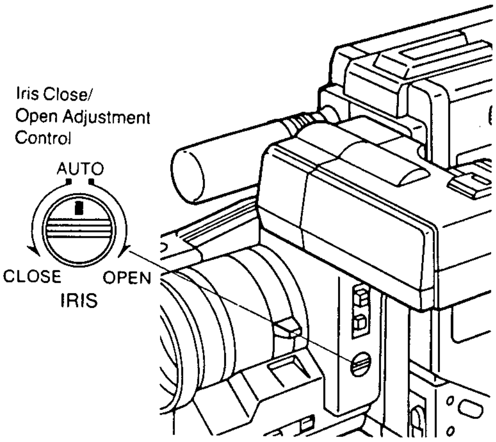
- The depth of field depends on the focus distance setting of the lens, the distance to the subject and iris value. When the lens is set to TELE position, the depth of field is small and only a small range of distances is in focus. On the other hand, when the lens is set to the WIDE position, the depth of field is greater and a large range of distances is in focus.

Picture with large depth of field.

Picture with little depth of field.

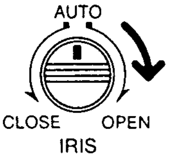
1-8-4. IRIS CLOSE/OPEN ADJUSTMENT

The VHS Movie features and Iris Close/Open adjustment Control that lets you override the auto iris in special lighting situations. Normally, the iris is automatically adjusted according to the amount of light entering the lens. However, when a subject is backlit or if the picture too bright, adjust the Iris Close/Open adjustment Control.
For normal lighting conditions, this control should be set to the centre click position.(automatic adjustment)



When a Subject is backlit

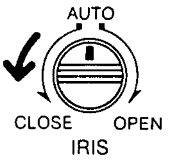
Turn in the "OPEN" direction.



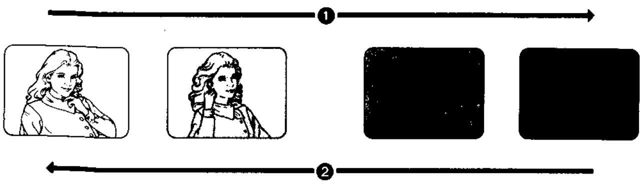
When shooting a backlit subject be careful that the lens is not aimed at extremely bright light.

When the picture is too bright.

Turn in the "CLOSE" direction.



Fade-in and fade-out operation is possibly by using the Start/Stop Button together with the Iris Close/Open adjustment Control.



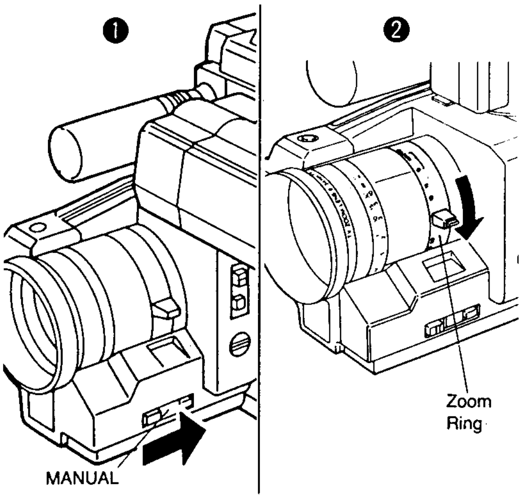
❶ To fade out a picture, turn the control from the centre click position to the "CLOSE" position.

❷ To fade in a picture, turn the control from the "CLOSE" position to the centre click position.

1-8-5. MACRO CLOSE-UP SHOOTING

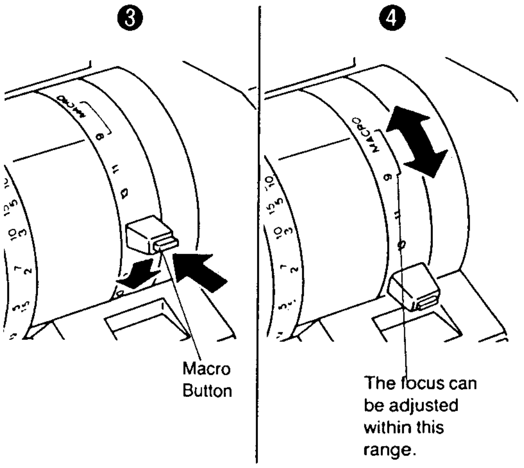
❶ When shooting in the macro range, the Auto focus mode does not operate. Therefore, use the "MANUAL" mode to adjust the focus.

❷ Turn the Zoom Ring all the way clockwise.



❸ Press the Macro Button and again turn the Zoom Ring clockwise.

❹ Turn the Zoom Ring slowly and focus on the desired object.



1-8-6. SOUND RECORDING

BULIT IN MICROPHONE AND EXTERNAL MICROPHONE SOCKET

❶ External Microphone Socket

- In normal shooting conditions, the built-in microphone is used. However, when you want to record sound in a large area or the singing of wild birds which you cannot get close to with the VHS Movie, and external microphone (optional) may be more suitable.
- When the recording is likely to be impaired by external noise of if the operating noise of the VHS Movie is offensive to the ear, use an external microphone.

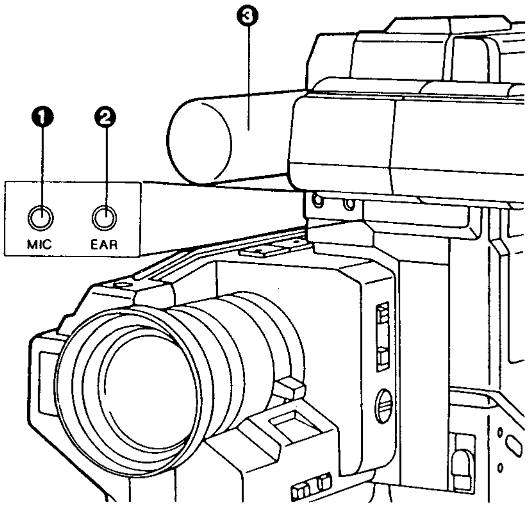
When and external microphone is connected, the built-in microphone is automatically switched off.

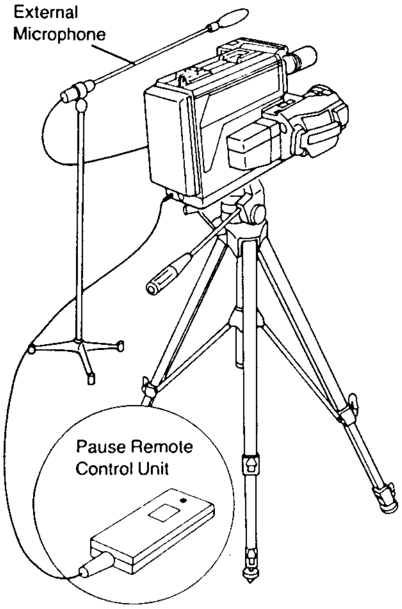
❷ Earphone socket

The sound being picked up by the microphone and being recorded can be monitored by connecting the earphone (supplied)

❸ Built-in Microphone

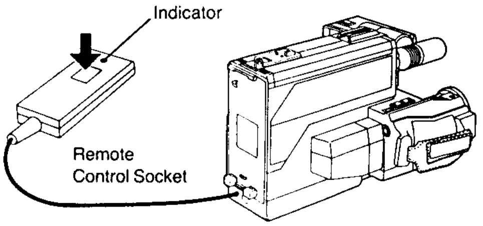
the built-in microphone is a sensitive unidirectional condenser mike.




External Microphone
Pause Remote Control Unit

Pause Remote Control Unit (optional)

- This pause remote controller is designed exclusively for the VHS Movie and allows operating recording start and stop from some distance. this is convenient when shooting with the VHS Movie mounted on a tripod.


Indicator
Remote Control Socket

- Press this button to start recording when the VHS Movie is in the recording pause mode. Press it again to change the VHS Movie over to the recording pause mode.
- The indicator is lit during recording.

2. WHAT ARE THE DIFFERENCES?

2-1. GENERAL

In addition to the technical merits of the conventional VHS Movie (NV-M1), this model (NV-M3) highlights other superlatives, e.g. Auto Focus system, Auto White tracking Circuit, facilities for recording external signal via Line Adaptor (VW-KM3), etc. Consequently, some circuits are developed and improved versions of their conventional equivalents.

This section is assigned to explain in details some of these new developments in order to familiarize service technicians with the technical differences of VHS Movie Model NV-M3. The main circuits of NV-M3 are identical with those of NV-M1. (Refer to the Training Manual of NV-M1)

2-2. SYSTEM CONTROL CIRCUIT

2-2-1. DEW DETECTION SYSTEM

In addition to the conventional Dew Sensor (1) (near the cylinder-unit), another Dew Sensor (2) is employed (in the cassette compartment side) in order to improve on the sensitivity for detection of moisture.

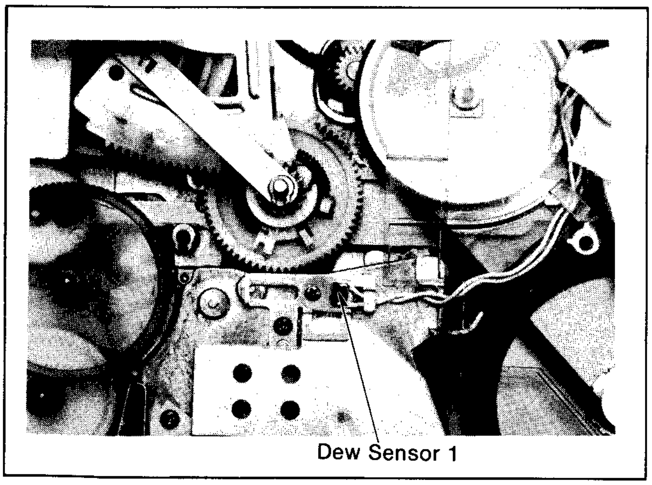

Dew Sensor 1

Fig.1

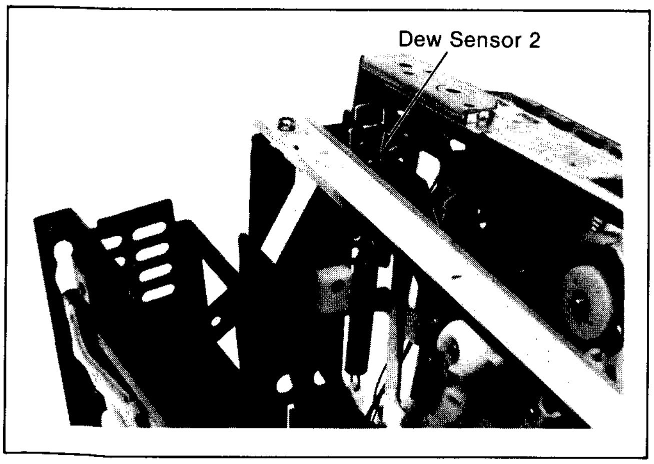

Dew Sensor 2

Fig.2

The circuit for Dew Sensor's (1) circuit is the same as the conventional model (see Fig.3) but Dew Sensor's (2) circuit is different and consists of Dew Sensor (2), Q6013 and QR6021.

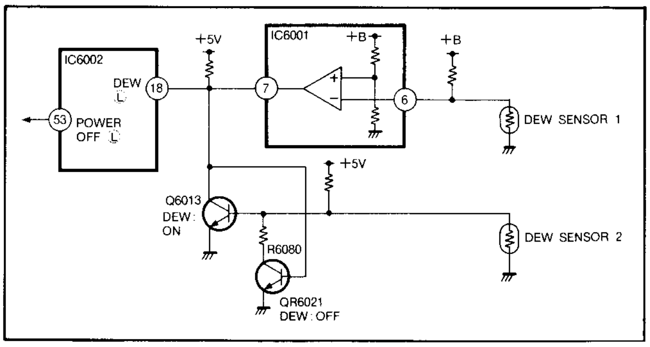

IC6002
DEW Ⓛ
18
53
POWER OFF Ⓛ
+5V
IC6001
+B
7
6
+B
DEW SENSOR 1
+5V
Q6013
DEW: ON
R6080
QR6021
DEW: OFF
DEW SENSOR 2

Fig.3

At normal conditions, the Dew Sensor is connected in parallel with R6080 to the GND. Because, QR6021 is turning on.
At high humidity, its resistance increases, and when it exceeds a predetermined level, Q6013 is turned on and a low level signal is sent to Pin 18 of IC6002.
Accordingly, a "Power-off" low level signal is generated from Pin 53 of IC6002 to cut off the power.
And QR6021 is turned off due to turn off the Q6013.

When normal conditions are recovered, while QR6021 continues to turn OFF , the Dew Sensor is no longer connected in parallel with R6080 to the GND.
Thus, upon recovering normal conditions, resistance of Dew Sensor 2 will be lower than during the formation of dew.
In other words, when normal conditions are recovered, is lower humidity than when the dew is formed.

2-2-2. CAMERA/AF ON/OFF CONTROL

The output of Pin 41 (see Fig.5) of IC6002 decides the ON/OFF mode of the power circuits of CAMERA and AF.

IC6002 Pin 41	OPERATION	MODE
High	CAMERA: OFF AF : OFF	STAND-BY PLAY (V-V)
Middle	CAMERA: ON AF : OFF	STOP (E-E) (used Battery)
Low	CAMERA: ON AF : ON	REC/PLAY STOP (used AC Adaptor)

Fig.4

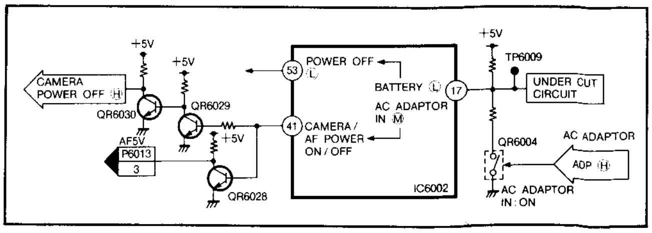
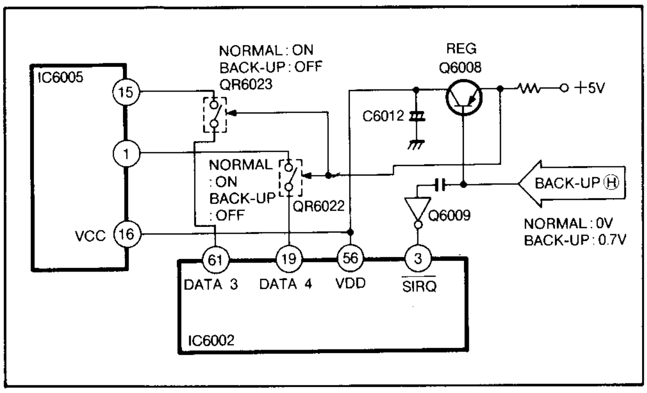

+5V
+5V
CAMERA POWER OFF Ⓗ
QR6030
QR6029
AF5V
P6013
3
+5V
QR6028
53
POWER OFF Ⓛ
BATTERY Ⓛ
AC ADAPTOR IN Ⓜ
41
CAMERA / AF POWER ON / OFF
IC6002
17
+5V
TP6009
UNDER CUT CIRCUIT
QR6004
AC ADAPTOR
ADP Ⓗ
AC ADAPTOR IN : ON

Fig.5

When the AC adaptor is connected, ADP high signal is sent to QR6004 from the adaptor. The QR6004, accordingly is turned on and the Pin 17 of IC6002 is brought to mid-level 2.0V. Output at Pin 41 will then be decided depending on the operation mode (Rec, Play, FF, Rew, etc...) and the connection of the AC adaptor.

2-2-3. BACK-UP CIRCUIT

Even when the power switch is turned off, the unit will continue to retain the character information by utilizing the back-up circuit. (see Fig.6)



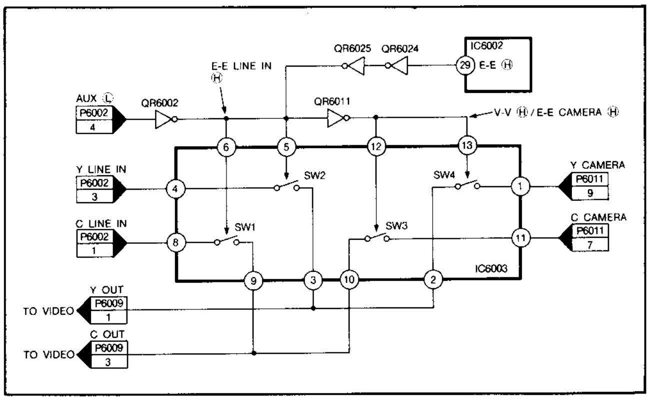
IC6005
15
1
VCC 16
NORMAL : ON
BACK-UP : OFF
QR6023
NORMAL : ON
BACK-UP : OFF
QR6022
REG
Q6008
+5V
C6012
BACK-UP Ⓗ
Q6009
NORMAL : 0V
BACK-UP : 0.7V
61
19
56
3
DATA 3
DATA 4
VDD
SIRQ
IC6002

Fig.6

Normally, +5V voltages are supplied to VDD and VCC of IC6002 and IC6005 through regulator Q6008. When the power switch is turned off, or in case of power failure, a back-up high signal is sent from the power supply section to Q6008 and Pin 3 of IC6002 through Q6009 and Pin 3 of IC6002 is brough to low-level in order to halt the operation of IC6002. Accordingly, Q6008 goes off.
Meanwhile, instead of the +5V, charged voltage from C6012 is supplied to IC6002 to keep on holding the character information. Also, in order to improve on the power consumption, charged voltage from C6012 is also supplied to IC6005. (If IC6005 is not backed up, the currents from IC6002 flow to IC6005) As the same purpose those QR6023 and QR6022 are cut.

2-2-4. CAMERA/LINE INPUT SWITCHING CIRCUIT

External signal (e.g. TV signal, etc..) can be recorded by using the Line Adaptor (VW-KM3). Normally camera signal is fed to the recording circuit. When the Line Adaptor is connected, its signal will be fed as the signal to be recorded. The switching operation is carried out by the switching circuit shown in Fig.7.



QR6025
QR6024
IC6002
29 E-E Ⓗ
E-E LINE IN Ⓗ
AUX Ⓛ
P6002
4
QR6002
QR6011
V-V Ⓗ / E-E CAMERA Ⓗ
6
5
12
13
Y LINE IN
P6002
3
4
SW2
SW4
1
Y CAMERA
P6011
9
C LINE IN
P6002
1
8
SW1
SW3
11
C CAMERA
P6011
7
IC6003
9
3
10
2
Y OUT
TO VIDEO
P6009
1
C OUT
TO VIDEO
P6009
3

Fig.7

Y signal (Luminance) and C signal (Chrominance) from CAMERA section are fed into Pins 1 and 11 of IC6003, while line-in signals are fed into Pins 4 and 8 of the same IC. When the Line Adaptor is connected, AUX low-level siganl from it is fed into QR6002.
Henceforth, high-level siganl is applied to Pins 6 and 5 to turn on Switches 1 and 2. Accordingly, line-in signals are fed into the Video circuit via Switches 1 and 2.

When the Line Adaptor is not connected and E-E mode (STOP/FF/REW) is set, Switches 3 and 4 are turned on. CAMERA signals are then fed to the Video circuit via Switches 3 and 4. Further, at V-V mode, even if the Line-Adaptor is connected, Switches 3 and 4 are turned on.
When V-V mode is carried out, CAMERA lines are connected but signals from CAMERA to the Video circuit are cut off. If line-in signals are connected to the Video circuit during V-V mode, signals from the Line adaptor may influence the Video signals.

2-3. SERVO CIRCUIT

The new ICs (IC2001: MN6179VBES, IC2002: AN3792S) are developed in this model.

IC2001 is servo control IC. IC2002 is Tracking Mono·Multi viblator and Amplifier IC.

Even these above new ICs are used,circuit of inside is based on NV-M1 and other ICs and circuits are same as NV-M1(refer to Training Manual for NV-M1).

2-3-1. CYLINDER SERVO

The simplified block diagram is shown in Fig.8.

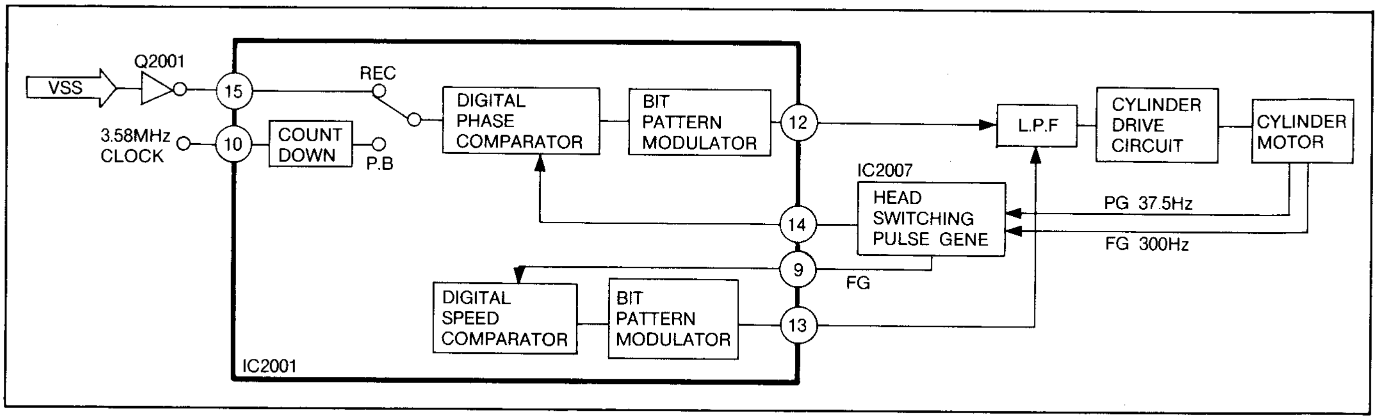

VSS
Q2001
3.58MHz CLOCK
15
10
COUNT DOWN
REC
P.B
DIGITAL PHASE COMPARATOR
BIT PATTERN MODULATOR
12
14
9
13
DIGITAL SPEED COMPARATOR
BIT PATTERN MODULATOR
IC2001
L.P.F
CYLINDER DRIVE CIRCUIT
CYLINDER MOTOR
IC2007
HEAD SWITCHING PULSE GENE
PG 37.5Hz
FG 300Hz
FG

Fig.8

In order to place the video tracks (video signal) on the tape in a specific pattern. Thus it is necessary to have the head cylinder motor servo-controlled.
Servo action assures that vertical sync occupies approx. 10H (horizontal lines) from the beginning of the track.
Since vertical sync is placed at the same spot on every track, it would seem logical to lock the servo the head cylinder motor spins at 2250 RPM.
To make sure that vertical sync is recorded at 10H on to the video track, the heads must be phase-locked to the video signal.
The servo system is composed of two sections: phase and speed control systems (See Fig.8)

1. Cylinder Speed Comparator

To achieve speed control, the servo circuits use a digital speed comparator.
The Cylinder Motor delivers a sine-wave signal with cylinder speed related frequency.(FG signal)
The sine-wave signal is converted to a square wave. The Cylinder FG signal is applied to the digital speed comparator (Fig.9). The cylinder FG frequency is then converted into a DC voltage by the digital speed comparator, the BPM circuit (Bit Pattern Modulation) and a low pass filter.

First, the cylinder FG frequency signal is converted into a variable pulse width by the digital speed comparator and the BPM circuit, then applied to the low pass filter.
Filtering the BPM output will yield a DC voltage, which in turn, is used to control the speed of the cylinder motor.
Normally, when the cylinder is running at the correct speed, a 50% duty cycle square wave is applied to the low pass filter. The motor can then be kept at the proper speed. If the cylinder motor speed varies, the BPM output and the output DC voltage are changed (Fig.10).

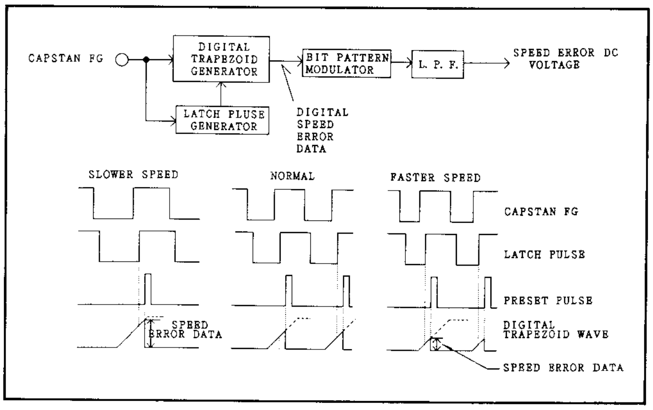

CAPSTAN FG
DIGITAL TRAPEZOID GENERATOR
BIT PATTERN MODULATOR
L. P. F.
SPEED ERROR DC VOLTAGE
LATCH PLUSE GENERATOR
DIGITAL SPEED ERROR DATA
SLOWER SPEED
NORMAL
FASTER SPEED
CAPSTAN FG
LATCH PULSE
PRESET PULSE
DIGITAL TRAPEZOID WAVE
SPEED ERROR DATA
SPEED ERROR DATA

Fig.9 Cylinder Speed Control

CYLINDER MOTOR SPEED	SLOWER ROTATION	PROPER SPEED	FASTER ROTATION
THE PWM CIRCUIT OUTPUT	The hight Period becomes shorter.	50%duty	The hight Period becomes longer.
DC VOLTAGE	The voltage decreases.	Center Voltage (approx. 2. 5V)	The Voltage increases.

Fig.10 Cylinder Speed Control Output

2. Cylinder Phase Comparator

To lock the phase of the motor to the incoming vertical sync signal during the record mode, a phase control is necessary.
To achieve phase control, the cylinder utilizes a PG signal produced by magnets of the flywheel and PC Head.
The head switching signals is produced from the cylinder PG and FG signal, therefore the head switching pulse changes in accordance with the cylinder motor phase.

The head switching pulse is applied to the cylinder phase comparator as the variable signal.
The reference signal of the cylinder phase comparator is the vertical sync signal of the incoming video signal in the record mode.

This relationship between the cylinder motor and the incoming video signal is controlled by the cylinder phase comparator. The phase relationship is converted to variable pulse widths by the digital phase comparator and the BPM circuit, then applied to the Low Pass Filter. Filtering the BPM output will yield a DC voltage, which in turn is used to control the phase of cylinder motor.

If the cylinder motor is kept at the correct phase, a 50% duty square wave will be produced and applied to the Low Pass Filter. The motor can be kept at the proper speed. If the cylinder motor speed varies, the BPM output DC voltage will change accordingly (See Fig.11).
In the case of the playback mode, the counted down clock signal is used as the reference signal.

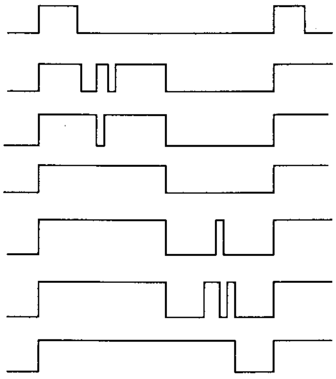
CYLINDER MOTOR PHASE	LATCH NUMBER OF THE CYLINDER PHASE COMPARATOR	B. P. M OUTPUT WAVEFROM	OUTPUT OF L. P. F
DELAYED PHASE ↑	INCREASE ↑		LOWER VOLTAGE ↑
CORRECT PHASE	SPECIFIC NUMBER		D. C. 2. 5V
↓ ADVANCED PHASE	↓ DECREASE		↓ HIGHER VOLTAGE

Fig.11 Cylinder Phase Error

2-3-2. CAPSTAN SERVO

The simplified block diagram is shown in Fig.12 .

The construction of circuit is same as NV-M1, although a newly developed IC is used.

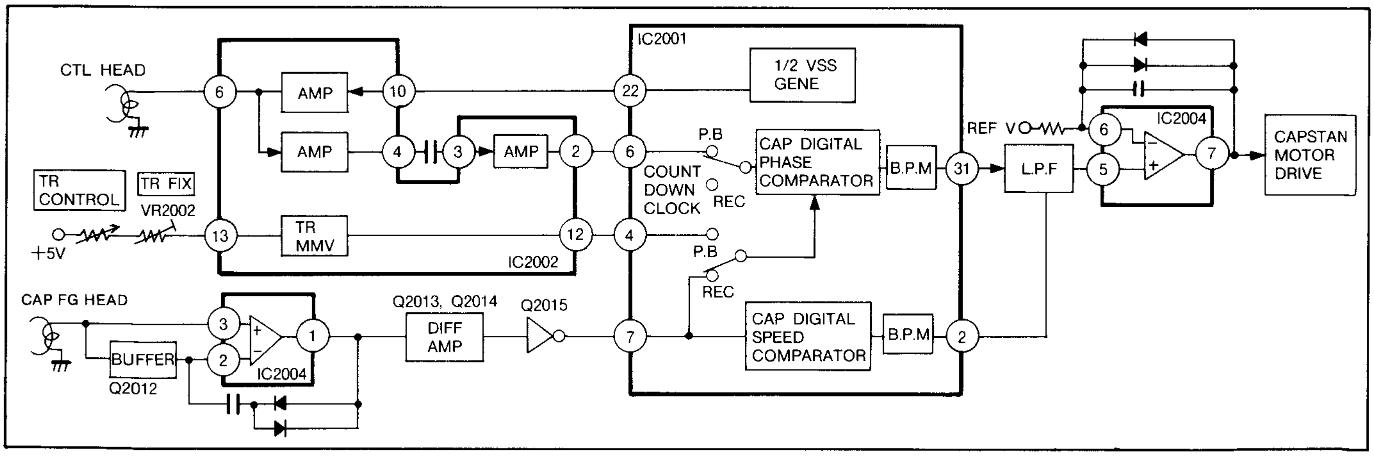

CTL HEAD
6
AMP
10
AMP
4
3
AMP
2
TR CONTROL
TR FIX
VR2002
+5V
13
TR MMV
12
IC2002
IC2001
22
1/2 VSS GENE
6
P.B
COUNT DOWN CLOCK
REC
CAP DIGITAL PHASE COMPARATOR
B.P.M
31
4
P.B
REC
CAP FG HEAD
3
2
1
BUFFER
Q2012
IC2004
Q2013, Q2014
DIFF AMP
Q2015
7
CAP DIGITAL SPEED COMPARATOR
B.P.M
2
REF V
L.P.F
6
5
IC2004
7
CAPSTAN MOTOR DRIVE

Fig.12 Capstan Servo

1. Capstan speed Comparator

The speed control of the capstan is similar to the cylinder speed control, and the same method is used to make a trapezoidal wave, as the FG output being a sine-wave(1135Hz). Further operations are similar to the cylinder servo.

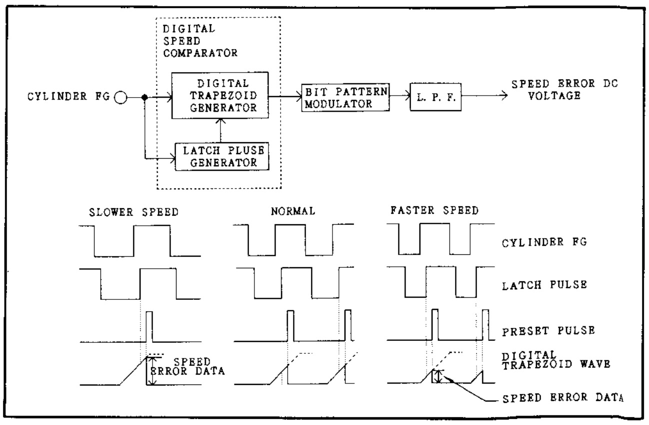

DIGITAL SPEED COMPARATOR
CYLINDER FG
DIGITAL TRAPEZOID GENERATOR
BIT PATTERN MODULATOR
L. P. F.
SPEED ERROR DC VOLTAGE
LATCH PLUSE GENERATOR
SLOWER SPEED
NORMAL
FASTER SPEED
CYLINDER FG
LATCH PULSE
PRESET PULSE
DIGITAL TRAPEZOID WAVE
SPEED ERROR DATA
SPEED ERROR DATA

Fig.13 Capstan Speed Control

(a). Capstan Phase comparator--Record Mode

In the record mode, the capstan motor should spin at a steady speed.
So that the counted down FG signal (PG signal:25Hz) is synchronized with the reference signal.
first, the counted down clock signal (25Hz) is used to produce the reference signal. At the same time, the capstan FG which is applied to pin 7 of IC2001 (1135Hz) and is counted down to 25Hz. (This counted down FG signal is called the capstan PG signal). Next, the digital monostable multivibrotor is triggered by the capstan PG signal, and produces a rectangular wave.
This rectangular wave is used to sample the reference. 10-bit phase-error-data is produced and applied to the BPM circuit. Further operation is the same as the cylinder phase control.

(b). Capstan Phase Comparator--Playback mode

In the playback mode, the capstan motor should be controlled so that the video heads trace the proper tracks.

(FUNDAMENTAL SIGNAL AND TRACKING CONTROLS)

In order to keep the proper relationship between the cylinder and capstan servos, the reference signal is produced from the cylinder phase control signal.

(CAPSTAN PHASE COMPARATOR)

The capstan phase comparator sychronizes, the phase between the reference and control signal Further, 10-bit phase-error data is produced and applied to the BPM circuit.

(Bit Pattern Modulation)

The circuit operation is quite similar to the cylinder phase comparator.

(Head Switching Signal Generator)

To achieve the 4 head herical switching, Head Switching Signal Generator IC2007 is provided. This IC is also same as used NV-M1.

2-4. VIDEO CIRCUIT

Video circuit (Luminance and Chrominance) are same as NV-M1 (refer to training Manual for NV-M1)

2-5. CAMERA CIRCUIT

In addition to NV-M1's camera circuit, Automatic Focusing system (AF) and Automatic White Tracking (AWT) circuits are employed in this model. So only those circuits different from NV-M1 are described below.

2-5-1. AUTOMATIC WHITE TRACKING (AWT)

In addition to the conventional Automatic White Balancing control (AWC) circuit, Automatic White Tracking (AWT) circuit is employed in this model. AWT circuit is a white balance circuit with a sensor for constant adjustment of the white balance.

In case of Automatic White Balance control, place the white cap over the lens, or aim the camera at a white object. Set the White Balance Selector to "AUTO" position, and press the "SET" button. In this case, IC901 detects the incoming level of red and blue signals (from the pick-up tube via IC902) and adjusts the Gain Control circuit so that the picture becomes white.

These red and blue gain levels are memorized and kept constant until the "SET" is pressed again.

Therefore, even if the colour temperature is changed, the red and blue gain levels (of the white balance) remain fixed until the next white balance adjustment is performed

Namely, this form of Automatic White Balanc control is effective if the colour temperature remains the same. But if the camera is in variable colour temperature conditions, the Automatic White Tracking becomes effective.

In case of Automatic White Tracking, set the White Balance Selector to "FULL AUTO" position. Henceforth, the sensor of the AWT circuit detects the red and blue components of the incoming light (the light is presumed

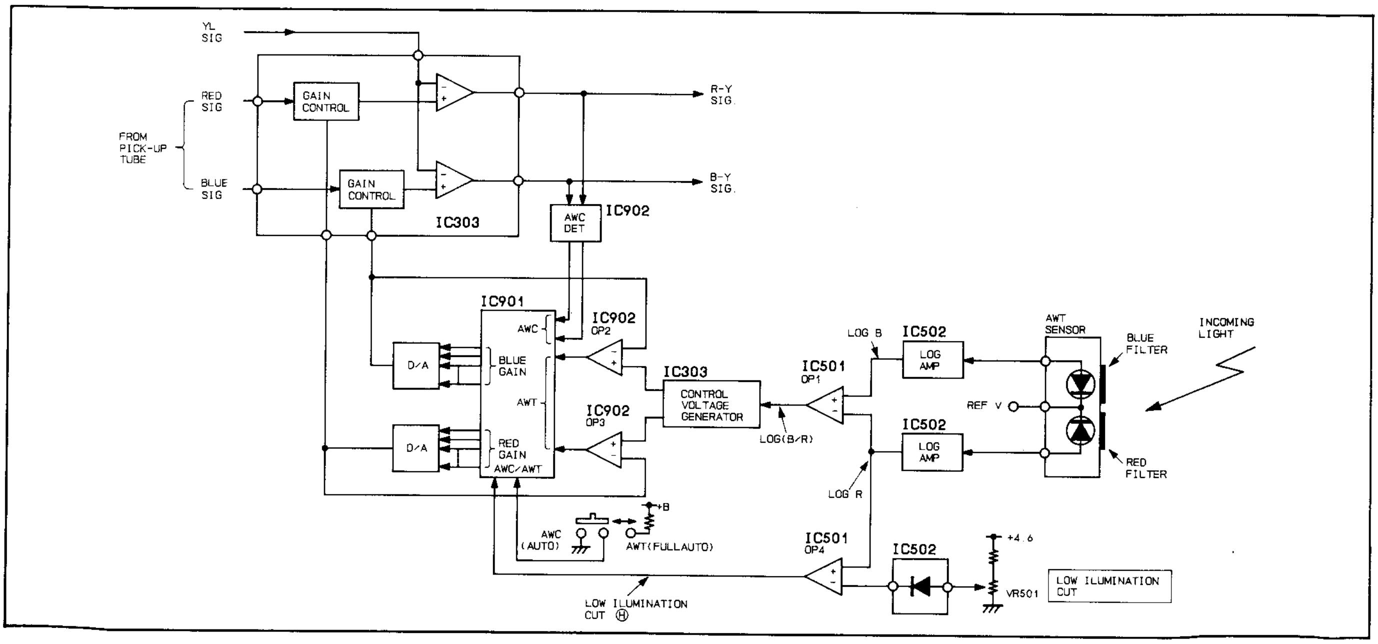

YL SIG
RED SIG
FROM PICK-UP TUBE
BLUE SIG
GAIN CONTROL
GAIN CONTROL
IC303
R-Y SIG.
B-Y SIG.
AWC DET
IC902
IC901
AWC
BLUE GAIN
AWT
RED GAIN
AWC/AWT
D/A
D/A
IC902 OP2
IC902 OP3
IC303
CONTROL VOLTAGE GENERATOR
LOG(B/R)
IC501 OP1
LOG B
LOG R
IC502
LOG AMP
IC502
LOG AMP
AWT SENSOR
REF V
BLUE FILTER
RED FILTER
INCOMING LIGHT
+B
AWC (AUTO)
AWT(FULLAUTO)
LOW ILUMINATION CUT Ⓗ
IC501 OP4
IC502
+4.6
VR501
LOW ILUMINATION CUT

Fig.14

to be a white beam) inducing IC901 to adjust the red and blue gain levels accordingly.

Note that IC901 is a common chip for both Automatic White Tracking and Balance control systems.

When White Balance Selector is set to "FULL AUTO", the signal of the Automatic White Tracking circuit is utilized. But, when the Selector is set on "AUTO" position, the R-Y and B-Y signals (from the pick-up tube) are used. (See Fig.14)

The AWT circuit converts the colour temperature of the incoming light beam into DC potential and adjusts the red and blue gain levels accordingly. (Refer to the block diagram in Fig. 14.)

The sensor of the AWT circuit detects the blue and red components of the incoming light beam. The blue components are filtered (by blue filter) and converted into DC potential by using photo-diode. The red components are treated likewise.

Both DC signals (of blue and red components) are sent to LOG AMP circuit for amplification on a logarithmic scale. This is to improve the dynamic range of signal from sensor. The amplified blue and red signals are subtracted at an operational amplifier, where the output becomes Log(B/R).

This ratio signal is then fed to a Control Voltage Generator IC901 via OP2 and OP3. The latter components detect the incoming signal levels and supply the resulting information to IC901 so that output at IC901 is the same as the input at OP2 and OP3.

IC901 is a White Balance integrated circuit. It generates a digital gain control signal in accordance with the red and blue input signals from OP2 and OP3. In short, IC901 is a buffer IC, e.g. when the camera is panned quickly (the colour temperature changes accordingly), the red and blue gains change quickly too, and the colour picture on the TV monitor becomes unstable.

In order to prevent this, IC901 is used. It changes the red and blue gain levels gradually as it displays hysteresis characteristics. It supplies a digital gain control signal to the D/A converter for due conversion into DC signals. These signals are then sent to the gain control block for adjusting the white balance in accordance with the colour temperature.

If the incoming light is insufficient, the sensor at AWT circuit will fail in detecting the colour temperature. In such a case, OP4 will detect the "low-light" conditions and supply accordingly "Low Illumination high " signal to IC901, so that the gain maintains the same red and blue gain levels achieved previously.

2-5-2. AUTO FOCUS CIRCUIT

1. Basic Principles

The Auto Focusing System (AFS) adopted in this model is based on the triangulation method for measuring the distance between the object and the camera by projecting an infra-red beam and receiving it after being reflected by the object. Position Sensitive Device (PSD) is used as an infra-red receiver.

When an infra-red ray hits the PSD, it would generate a current which varies inversely with the distance between the infra-red hitting portion (IHP) and the output pole.

Output 1 and 2 are:

$I1=I0\ (l/2 + x)/l$ ....(1)

$I2=I0\ (l/2 - x)/l$ ....(2)

Where:
$I0$ = Photo current
x = Distance between IHP and the centre of PSD, and
l = Distance between the output 1 Pole and output 2 Pole.

From (1) and (2):

$(I1-I2)/(I1+I2)=2x/l$ ....(3)

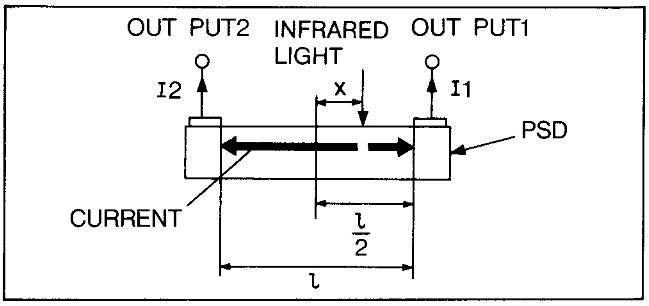


Fig. 15

Structural construction of the AFS is shown in Fig. 16.

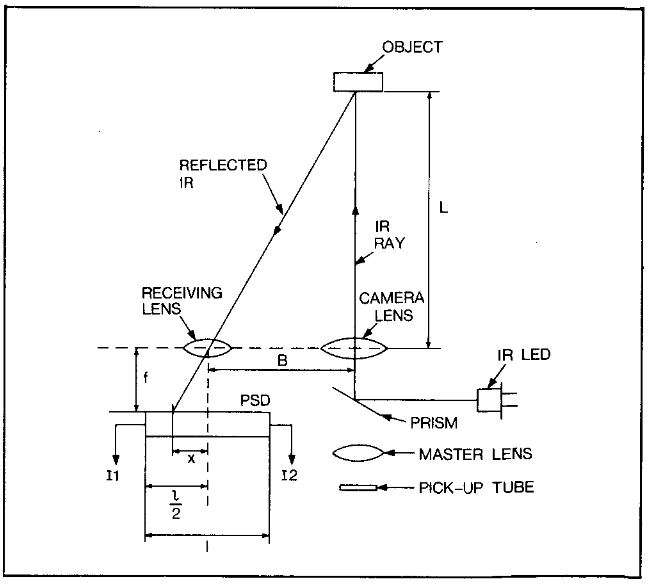


Fig.16

Infra-red ray from IR LED is reflected by the prsim and projected on the object through the lens of the camera. The reflected ray (from the object) hits the PSD through the receiving lens.

The x:f ratio is equal to B:L ratio.
$L/B = f/x \qquad x = f.B/L$ ----(4)

From (3) and (4):

$$\underline{\underline{(I1-I2)/(I1+I2)=2fB/L \times 1/l}}$$

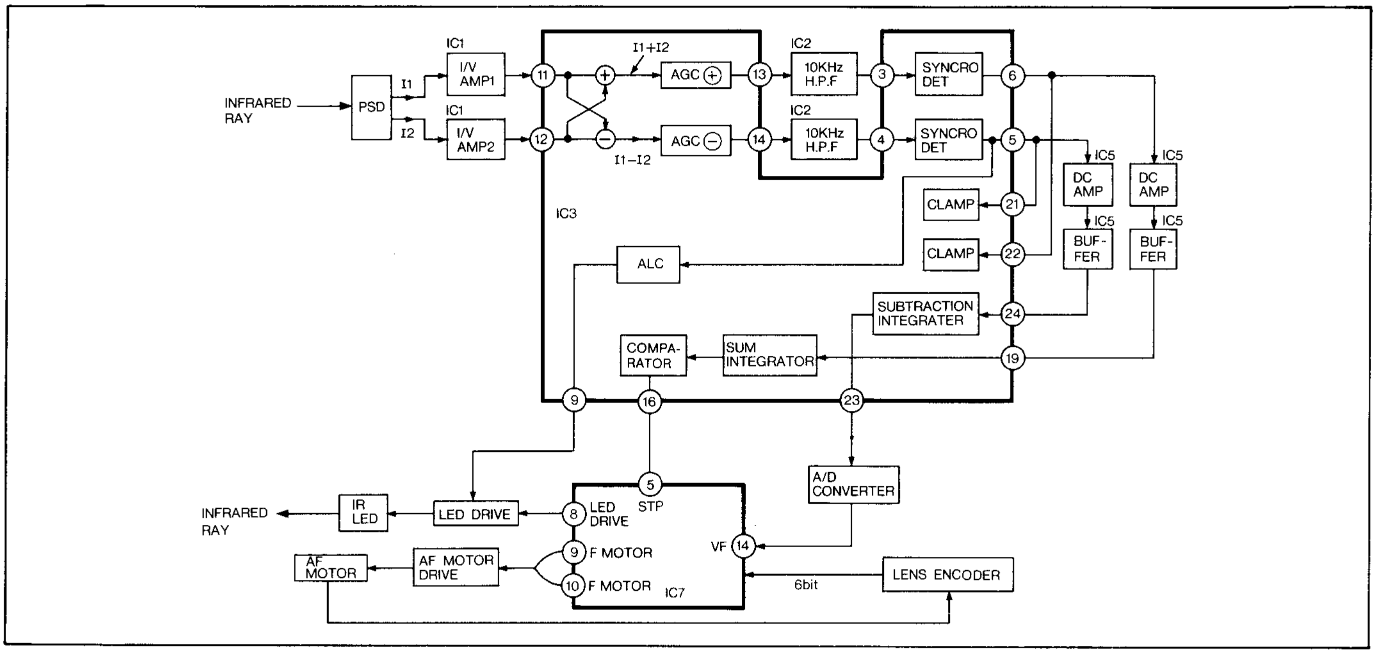
In other words, (I1+I2)/(I1-I2) is proportional to L (distance between camera and object).

Therefore, in getting this ratio, the distance between the object and the camera can be measured.

This calculation is carried out by IC7.

2. AUTO FOCUS CIRCUIT

Simplified block diagram is shown in Fig. 17.



INFRARED RAY
PSD
I1
I2
IC1
I/V AMP1
IC1
I/V AMP2
11
12
I1+I2
I1-I2
AGC ⊕
AGC ⊖
13
14
IC2
10KHz H.P.F
IC2
10KHz H.P.F
3
4
SYNCRO DET
SYNCRO DET
6
5
IC5
DC AMP
IC5
DC AMP
IC5
BUF-FER
IC5
BUF-FER
IC3
CLAMP
21
CLAMP
22
ALC
SUBTRACTION INTEGRATER
24
COMPA-RATOR
SUM INTEGRATOR
19
9
16
23
A/D CONVERTER
5
STP
8
LED DRIVE
INFRARED RAY
IR LED
LED DRIVE
9
F MOTOR
10
F MOTOR
IC7
VF
14
AF MOTOR
AF MOTOR DRIVE
6bit
LENS ENCODER

Fig.17

Infra-red beam is projected on the object after being modulated at 10KHz. The reflected beam from the object hits the PSD. Signals I1 and I2 from the PSD are then amplified. IC3 carries out summation and subtraction to calculate (I1+I2) and (I1-I2). Low level noises are cut out by HPF, then (I1+I2) and (I1-I2) signals are detected by a synchronized detector and then integrated by sum and subtraction integrator.

In the integrator when Integrated (I1+I2) reaches certain level, the level of integrated (I1-I2) signal which is fed into microprocessor IC7 through A/D converter is read in IC7, and the distance (L) is calculated.

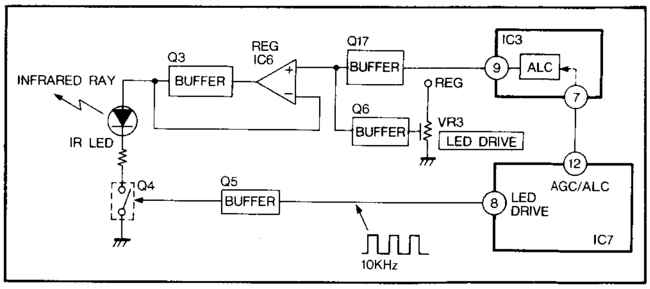
Focusing lens position (FLP) is also detected (by Lens Encoder), and the digital information (from Lens Encorder) is fed into IC7 too.

Lens Encoder will be explained later.

IC7, then, compares the FLP with measured distance (L) and generates a controlling signal to the focusing motor to adjust the lens accordingly.

(1) IR LED Drive

This circuit is assigned for projecting the modulated (at 10KHz) infra-red beam on the object. Simplified block diagram is shown in Fig. 18.



INFRARED RAY
IR LED
Q3
BUFFER
REG
IC6
Q17
BUFFER
Q6
BUFFER
REG
VR3
LED DRIVE
IC3
9
ALC
7
12
AGC/ALC
Q4
Q5
BUFFER
10KHz
8
LED DRIVE
IC7

Fig. 18

Potential is always applied at the anode side of IR LED. The value of this, is determined by ALC. If the distance (L) is less than 3m, high signal is sent to Pin 7 of IC3, and ALC will adjust the intensity of the infra-red beam generated by IR LED in accordance with the distance. However, if the distance (L) is more than 3m, ALC output is fixed to maximum and the AGC circuit is activated.

Now, as the 10KHz pulse is applied to the cathode side of IR LED, the latter would generate 10KHz infra-red beam through the camera lens (refer to Fig.16).

(2) I/V Amplifier

The output current from PSD is converted to a DC signal by an operational amplifier IC1.

(3) AGC/ALC

There are two modes in this AF circuit.

(a) AGC Mode: Intensity of the infra-red beam is maximized and gain of the AGC is regulated in accordance with the incoming signal.

(b) ALC Mode: The gain of AGC is fixed and the intensity of the infra-red beam from IR LED is adjusted.

Mode switchig conditions are:

ALC .... Less than 3m.
AGC .... More than 3m.

(4) 10KHz H.P.F (High Pass Filter)

In order to improve S/N ratio, components of less than 10KHz are cut out by this filter. It consists of IC2, capacitors and resistors.

(5) Synchronous Detector

This detector detects the signal from IR LED using a reference signal synchronized with the infra-red beam frequency (10KHz).

AGC and ALC are controlled by the detected summation (I1+I2).

(6) Subtraction Integrator/Summation Integrator

In order to detect the (I1-I2) and (I1+I2) ratio signals, Subtraction Integrator and Summation Integrator together with IC7, RA1 and IC8 (refer to Fig. 19) are used.

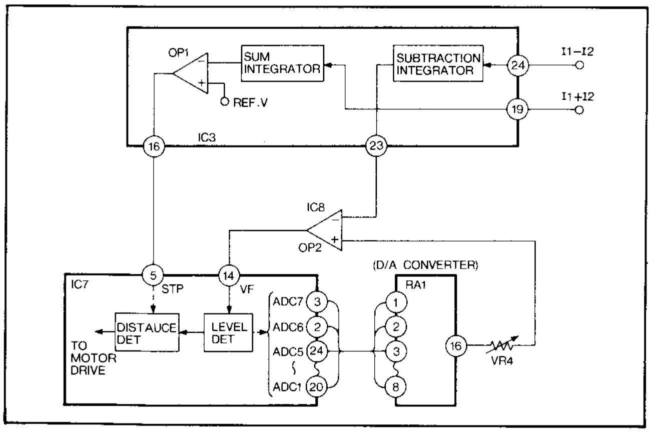

OP1
SUM INTEGRATOR
SUBTRACTION INTEGRATOR
I1−I2
I1+I2
24
19
REF.V
IC3
16
23
IC8
OP2
(D/A CONVERTER)
IC7
5
STP
14
VF
DISTAUCE DET
LEVEL DET
TO MOTOR DRIVE
ADC7
ADC6
ADC5
ADC1
3
2
24
20
RA1
1
2
3
8
16
VR4

Fig. 19

(I1-I2) signal is fed to comparator (IC8) by the Subtraction Integrator. Level Detector at IC7 supplies pulses (8bit)to D/A converter (RA1) in accordance with the output of IC8. These pulses are then converted to DC voltage and supplied to the comparator (IC8).

In accordance with the results of comparison, the Level Detector regulates the pulses supplied to D/A converter (RA1).

In such a manner, the Level Detector detects the output of the subtraction Integrator (I1-I2).

(I1+I2) signal is also supplied to the comparator (operational amplifier op1 after being integrated by the Summation Integrator.

When the integrated signals reach certain voltage level, operational amplifier 1 generates pulse to be supplied to the Distance Detector as a Stop signal. This time, however, the Distance Detector reads the Subtraction Integrator's output and calculates (I1-I2) and (I1+I2) ratios. The distance (L) is thus measured, and the information is sent to the Motor Drive circuit.

(7) Lens Encoder

Location of the Lens Encoder is shown in Fig. 20. The Lens Encoder (LE) detects the FLP (Focus Lens position) so that the focus is adjusted correctly. It consists of a moving contact, 6 fixed terminals and a GND terminal (refer to Fig. 21). The moving contact (MC) is interlocked with the focusing ring. As the latter moves, the moving contact moves too.

One side of the MC is at connected to the GND terminal. When any of the 6 terminal contacts the MC, it would be grounded and the output signal become 6 bit signals.

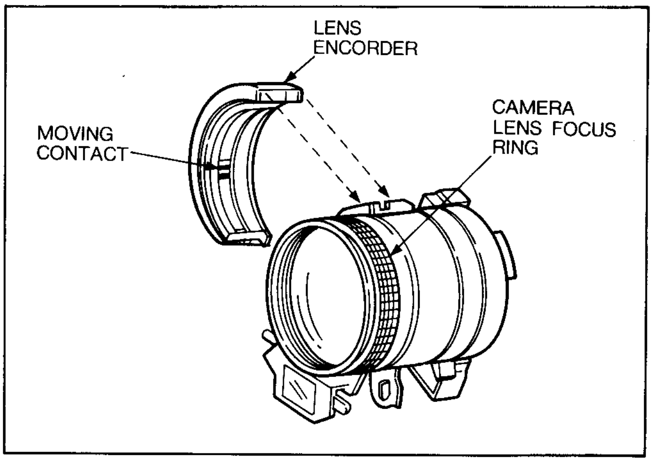

LENS ENCORDER
MOVING CONTACT
CAMERA LENS FOCUS RING

Fig. 20

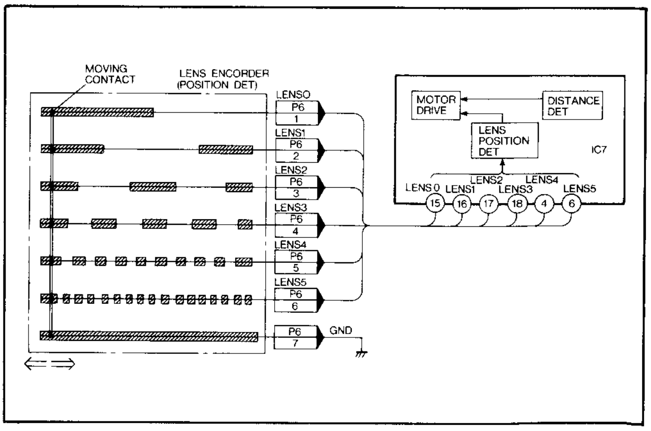

MOVING CONTACT
LENS ENCORDER (POSITION DET)
LENSO
LENS1
LENS2
LENS3
LENS4
LENS5
P6
1
2
3
4
5
6
7
GND
MOTOR DRIVE
DISTANCE DET
LENS POSITION DET
IC7
LENS 0
LENS1
LENS2
LENS3
LENS4
LENS5
15
16
17
18
4
6

Fig. 21

6-bit position data from the fixed terminals are generated and sent to IC7 to determine FLP (Focus Lens Position) by means of Lens Position Detector.

The motor drive circuit compares the data of FLP with that of the distance (L) coming from the Distance Detector. Accordingly, it generates motor drive signal to adjust the lens for the best possible position.

3. ABBREVIATIONS OF TERMS

ACC	Automatic Colour Control
ADJ	Adjustment
ADM	Adress Memory
AF	Automatic Focusing system
AFC	Automatic Frequency Control
AGC	Automatic Gain Control
APC	Automatic Phase Control
AWC	Automatic White Balance Control
AWT	Automatic White Tracking
BLK	Blanking
BPF	Band Pass Filter
BSC	Blue Sub Carrier
B/W	Black and White
CBA	Circuit Board Assembly
CP1	Clamping Pulse 1
CP2	Clamping Pulse 2
CRT	Cathode Ray Tube
DET	Detector
DIFF AMP	Differential Amplifier
DL	Delay Line
DOC	Drop Out Compensator
EE	Electronics to Electronics
EVF	Electronic View Finder
FBT	Fly Back Transformer
FG	Frequency Generator
FH	15.625KHz Horizontal Drive Pulse Frequency
FL	Filter
FM Signal	Frequency Modulated Signal
GEN	Generator
H	Horizontal
HSS	Horizontal Synchronizing Pulse
LDI	Latch Data Information
LIN	Linearity
LPF	Low Pass Filter
MMV	Monostable Multi-Vibrator
MODU	Modulation
OB	Optical Black
OSC	Oscillator
PC	Phase Comparator
PED	Pedestal
PG	Pulse Generator
PSD	Position Sensitive Device
RF	Radio Frequencies
RSC	Red Sub Carrier
SC	Sub Carrier
SC1	0 degree Phase Sub Carrier
SC2	90 degree Phase Sub Carrier
SEPA	Separation, Separator
SS	Slow and Still
TP	Test Point
V	Vertical
VCO	Voltage Controlled Oscillato
VP	Vertical Pulse
VV	Video to Video
VXO	Voltage Controlled Crystal Oscillator
WBLK	Wide Blanking Pulse
XTAL	Crystal
YH	Luminance Signal
YL	Low Band Luminance Signal

SECTION 2
ADJUSTMENT PROCEDURES

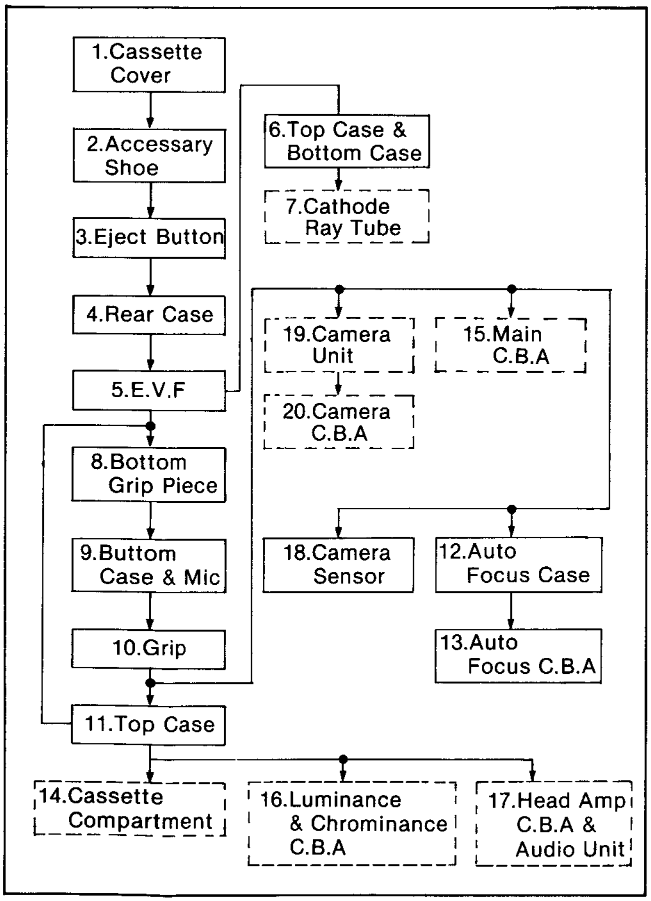
Caution:Servise Work or for any part must be performed in dust free location to keep the unit dust free.

2-1. DISASSEMBLY METHOD

2-1-1. DISASSEMBLY FLOWCHART

This flowchart indicates disassembly steps of the cabinet parts and the C.Boards in order to find the items necessary for servicing. When reassembling, perform the steps in the reverse order.

Note:
a. When removing the cabinet, work with care so as not to break the locking portions.



1.Cassette Cover
2.Accessary Shoe
3.Eject Button
4.Rear Case
5.E.V.F
6.Top Case & Bottom Case
7.Cathode Ray Tube
8.Bottom Grip Piece
9.Buttom Case & Mic
10.Grip
11.Top Case
12.Auto Focus Case
13.Auto Focus C.B.A
14.Cassette Compartment
15.Main C.B.A
16.Luminance & Chrominance C.B.A
17.Head Ampi C.B.A & Audio Unit
18.Camera Sensor
19.Camera Unit
20.Camera C.B.A

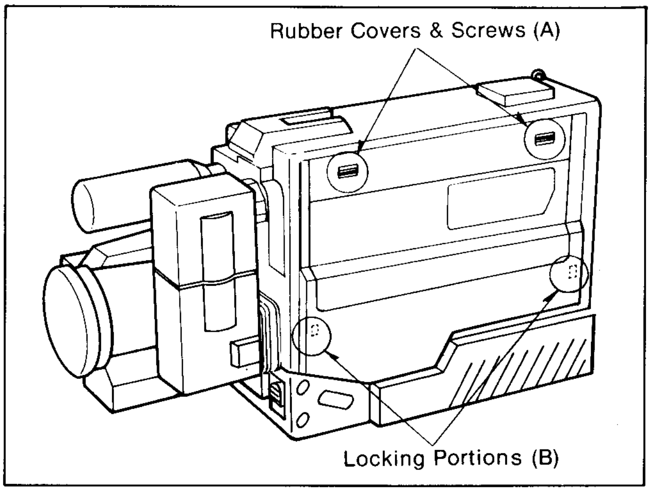
Fig. D1

2-1-2. DISASSEMBLY METHOD

Notes:
a. Place the cloth or any other soft materials under the C.B.A or unit for preventing them being damaged while servicing. Rubber Cover & Screws(A).
b. When reinstalling, ensure the connectors are connected and any electrical components are not damaged.
c. Do not supply power to the unit during working.

1.Removal of the Cassette Cover

(1) Remove 2 rubber covers and 2 screws (A). Then carefully lift and pivot the front portion to remove.
Pay attention so as not to damage the locking portions (B).

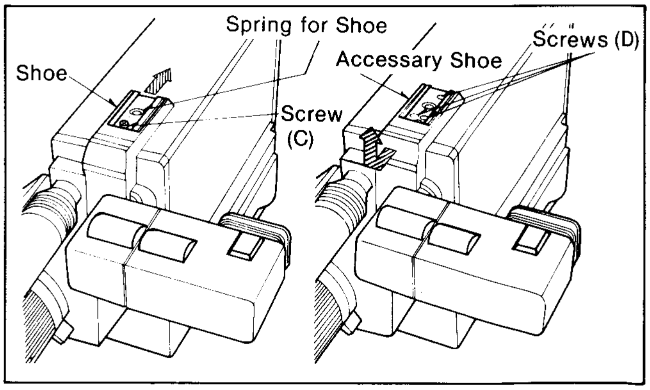


Rubber Covers & Screws (A)
Locking Portions (B)

Fig. D2

2.Removal of the Accessary shoe

(1) Remove 1 screw (C) and spring for shoe.
(2) Remove 3 screw (D) and shoe.

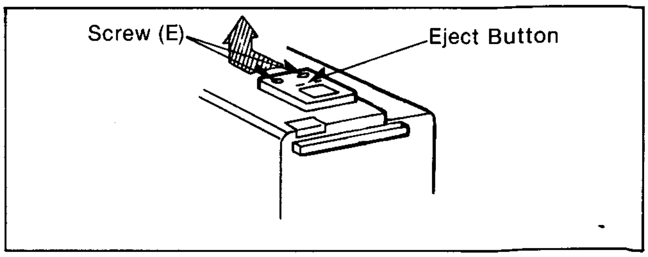


Spring for Shoe
Shoe
Accessary Shoe
Screws (D)
Screw (C)

Fig. D3

3.Removal of the EJECT Button

(1) Remove 2 screws (E).



Screw (E)
Eject Button

Fig. D4

4. Removal of the Rear Case

(1) Remove 4 screws (F) and pull the (G) portion of the Rear case, and push the (H) portion as arrow marks.

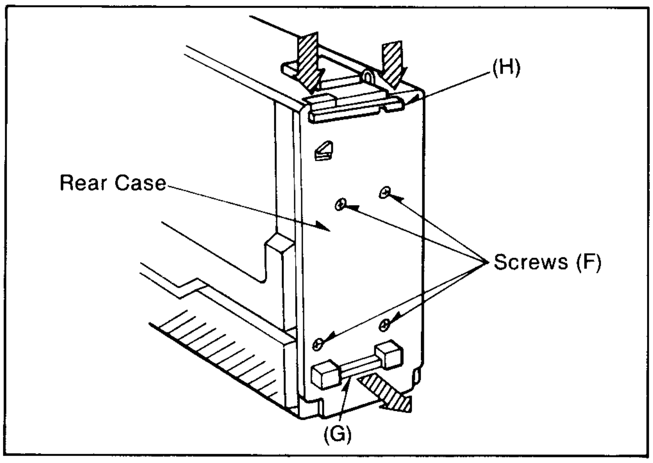

(H)
Rear Case
Screws (F)
(G)

Fig. D5

(2) Remove screw (I) then remove the Battery Catcher.

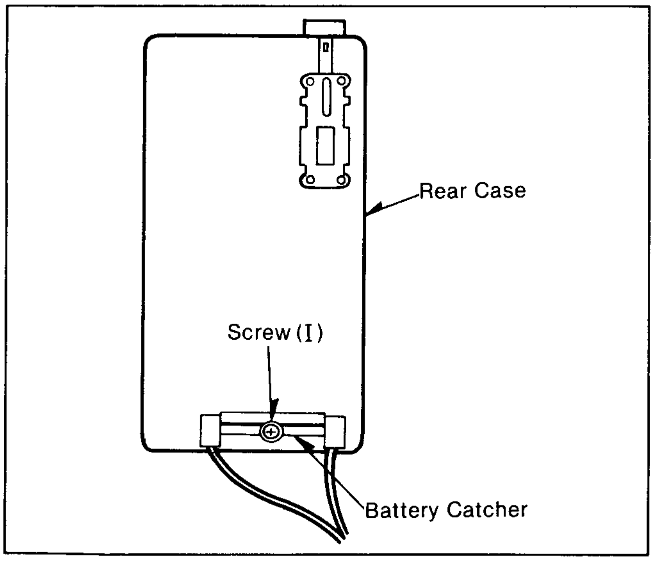

Rear Case
Screw (I)
Battery Catcher

Fig. D6

5. Removal of the EVF

(1) Remove 1 screw (J) and slide up the E.V.F as arrow mark and disconnect the connector of the EVF.

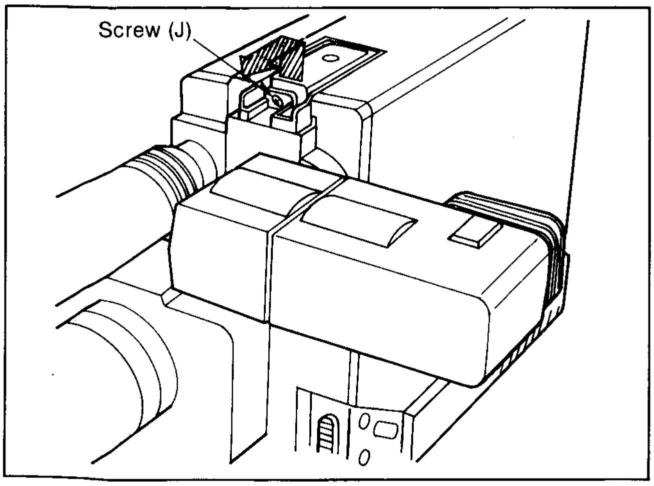


Fig. D7

6. Removal of the Top case and Bottom case of the EVF

(1) Remove a ring (K) and Front Panel unit.

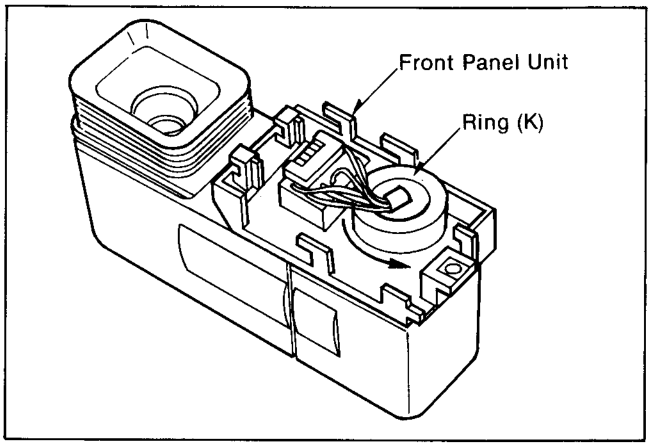

Front Panel Unit
Ring (K)

Fig. D8

(2) Remove ring (L) and 2 screws (M).
(3) Remove the Bottom Holder and Top Holder.

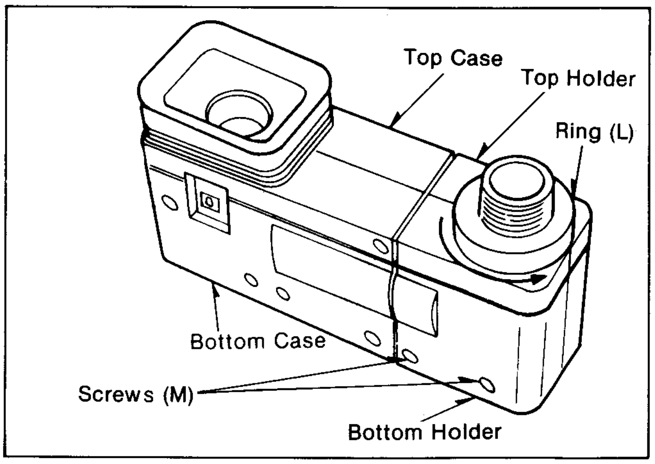

Top Case
Top Holder
Ring (L)
Bottom Case
Screws (M)
Bottom Holder

Fig. D9

(4) Remove the 5 screws (N) and remove the Top case and Bottom case.

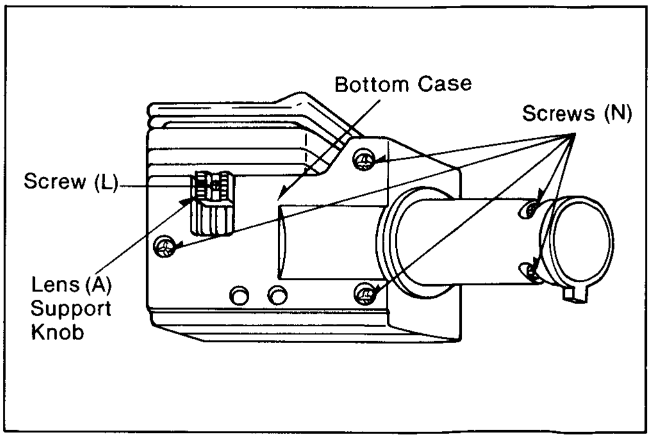

Bottom Case
Screws (N)
Screw (L)
Lens (A)
Support
Knob

Fig.D10

(5) Remove the screw (L) and the Lens (A) Support knob.

7.Removal of the cathode ray tube

(1) Disconnect the CRT socket and remove the rubber (CRT fixing).
(2) Loose screw (O) and remove the CRT.

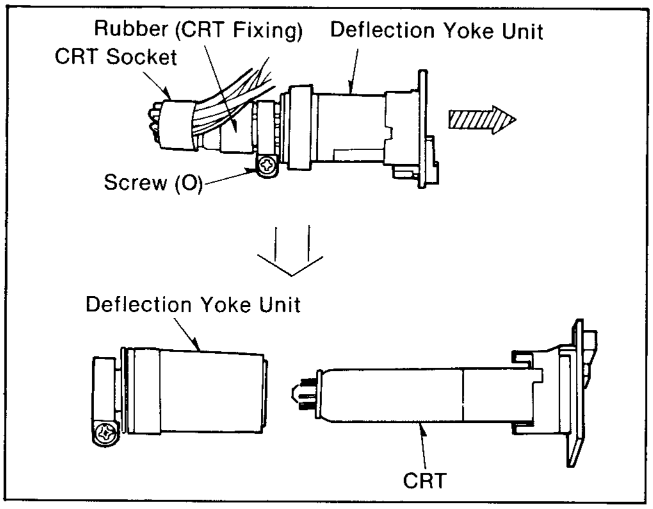

Rubber (CRT Fixing)
Deflection Yoke Unit
CRT Socket
Screw (O)
Deflection Yoke Unit
CRT

Fig. D11

Note:
a When reinstalling or replacing of a CRT, connect EVF connector and turn on the power SW before casing (pay attention not to touch to any parts.)
Then adjust the deflection yoke so that the monitor of the CRT becomes holizontal position and fix it by adhesive tape.

8.Removal of the Bottom Grip piece

(1) Remove 2 screws (P) and remove the Bottom Grip piece.

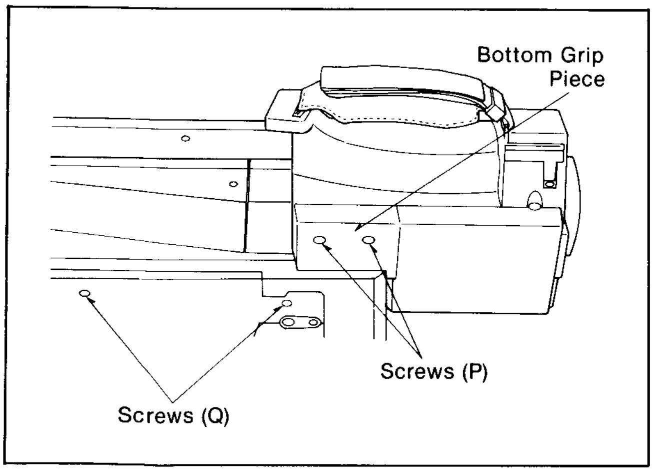

Bottom Grip Piece
Screws (P)
Screws (Q)

Fig. D12

9.Removal of the Bottom Case and Mic

(1) Remove 2 screws (Q). Refer to Fig.D12.
(2) Remove 7 screws (R) and remove the Bottom case with Mic unit.
(3) Disconnect the Mic connector.

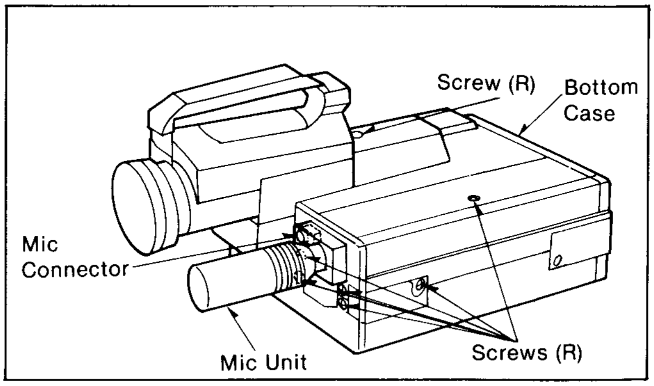

Screw (R)
Bottom Case
Mic Connector
Mic Unit
Screws (R)

Fig. D13

(4) Remove the Mic unit from the Bottom case.

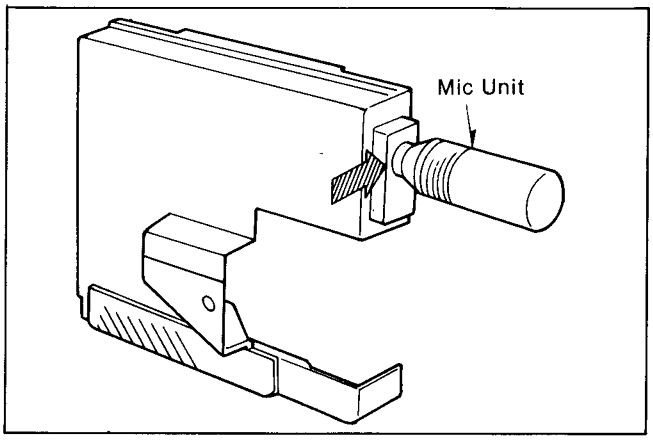


Fig. D14

(5) Remove 2 screws (S) of the Mic unit then remove the Mic holding angle.

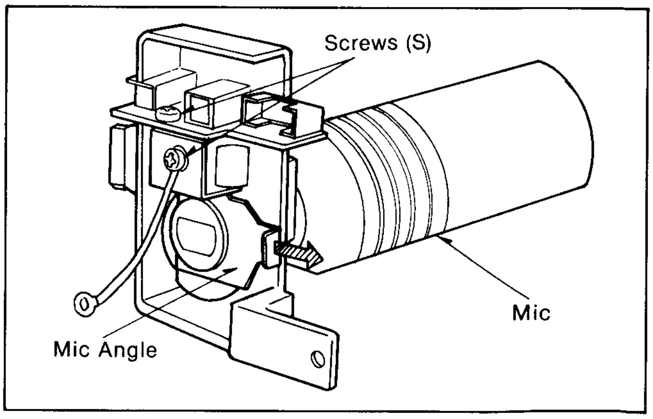

Screws (S)
Mic
Mic Angle

Fig.D15

10.Removal of the Grip

(1) Remove 3 screws (T) and disconnect P801, P802, P803.

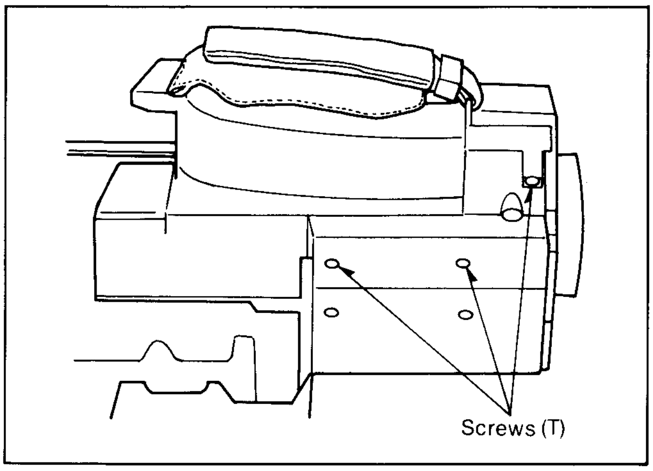


Fig. D16

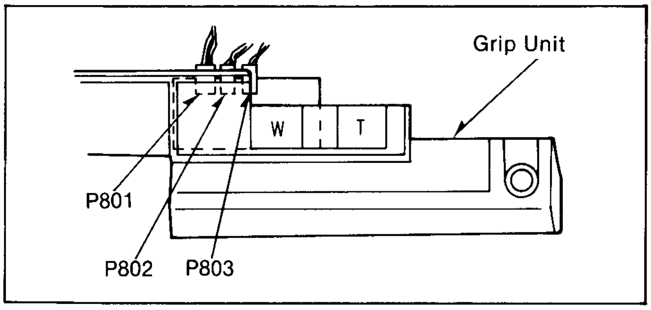

Grip Unit
W
T
P801
P802
P803

Fig. D17

11.Removal of the Top Case

(1) Remove 3 screws (U) on the top case. Then remove the top case.
(2) Disconnect P7 and remove the 2 screws (I) and remove the Operation C.B.A.

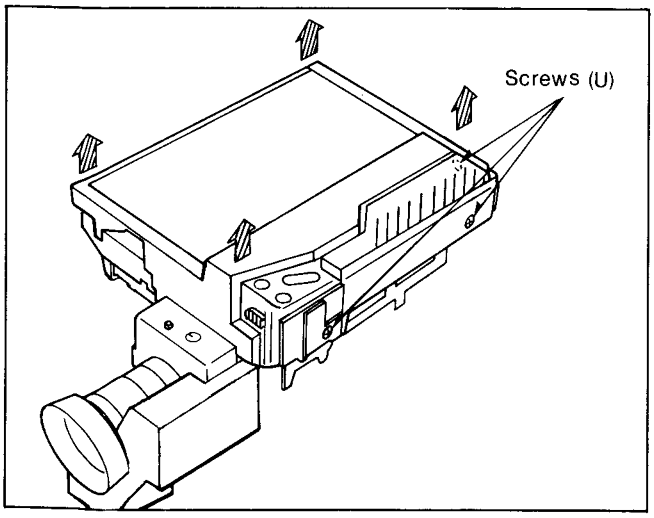


Fig. D18

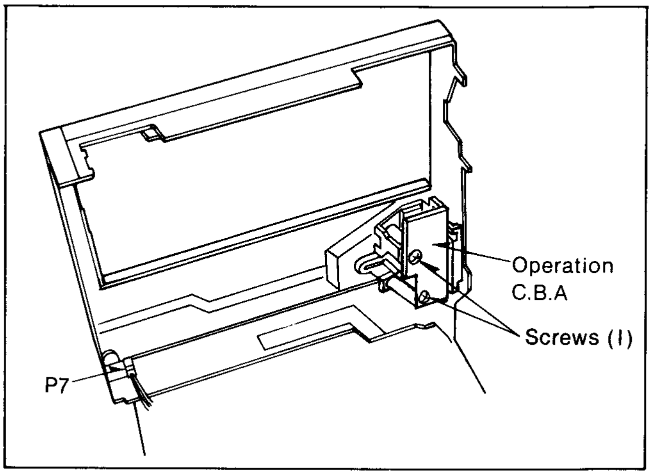

Operation C.B.A
Screws (I)
P7

Fig. D19

12.Removal of the Auto Focus Case

(1) Remove the 3 screws (V) and remove the Auto Focus case.
(2) Disconnect P01 and remove 2 screws (W).

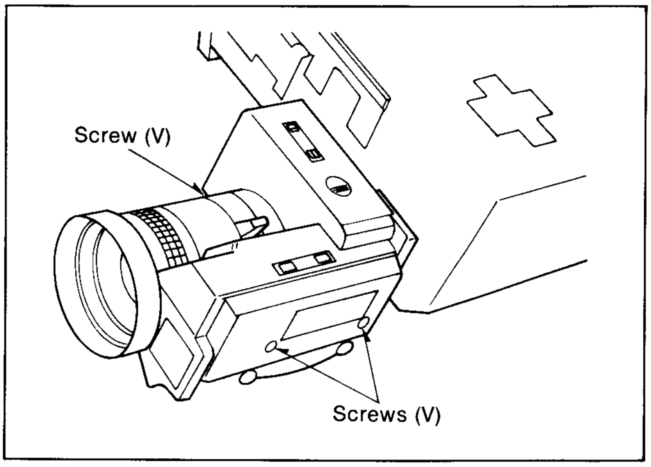

Screw (V)
Screws (V)

Fig. D20

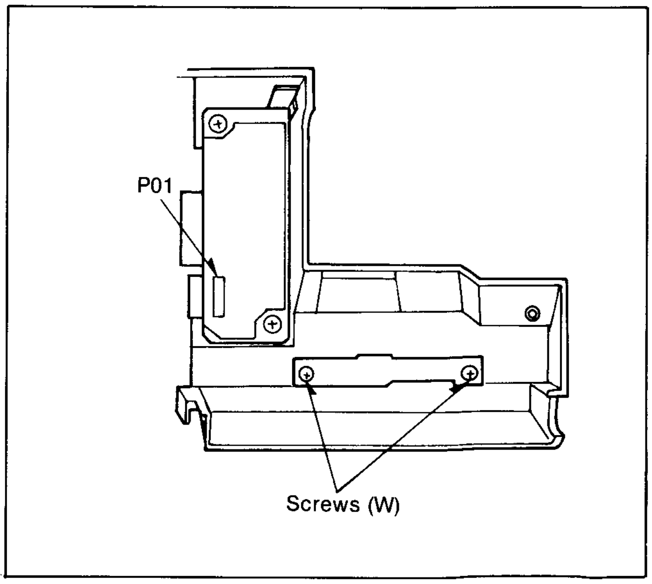

P01
Screws (W)

Fig. D21

13.Removal of the Auto Focus C.B.A.

(1) Remove 2 screws (X) and disconnect the P2, P3, P4, P5, P6 and PSD wire.
(2) Remove the Auto Focus C.B.A.

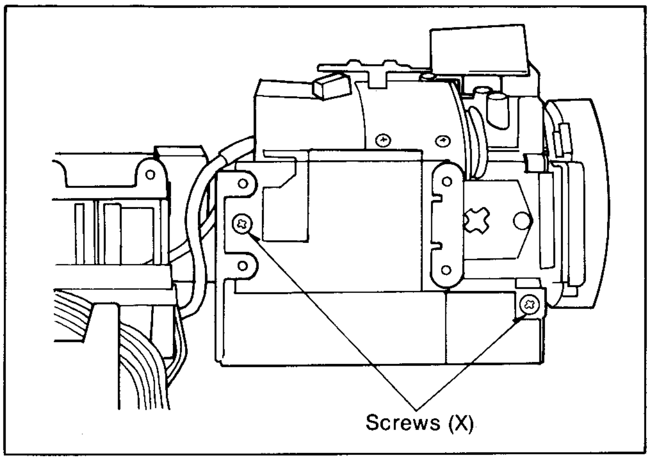


Fig. D22

14.Removal of Cassette Compartment

(1) Remove 4 screws (Y). Then remove the Cassette Compartment.

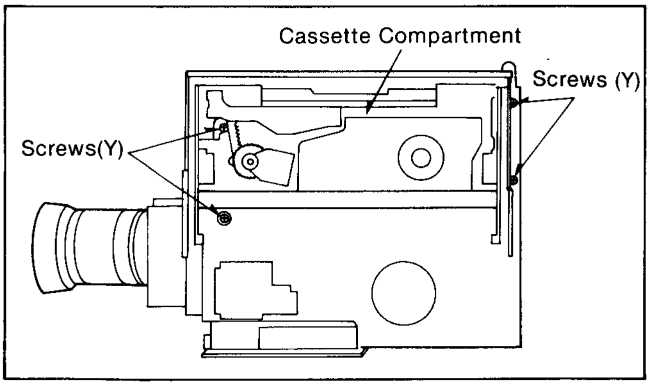

Cassette Compartment
Screws (Y)
Screws(Y)

Fig. D23

(2) Remove 2 screws (Z) and then remove the takeup and supply photo Tr. C.B.A.

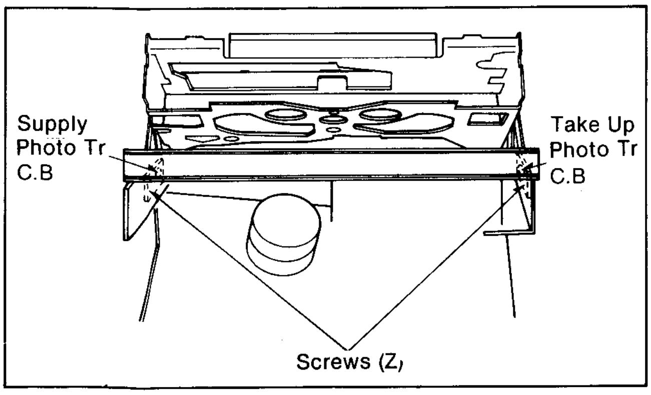

Supply
Photo Tr
C.B
Take Up
Photo Tr
C.B
Screws (Z)

Fig.D24

15.Removal of the Main C.B.A.

(1) Remove the Camera unit. Refer to Fig.D31
(2) Disconnect the P6001 and FJ11.
(3) Remove 3 screws (A).

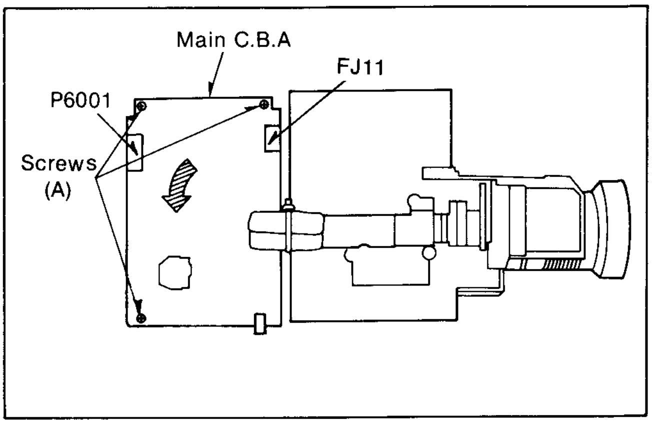

Main C.B.A
FJ11
P6001
Screws
(A)

Fig.D25

16.Removal of the Luminance Chrominance C.B.A.

(1) Remove 3 screws (B). After remove the C.B.A. from the deck, remove the other 2 screws (C).
(2) Disconnect P3003, P3004, P3001 and P3002.

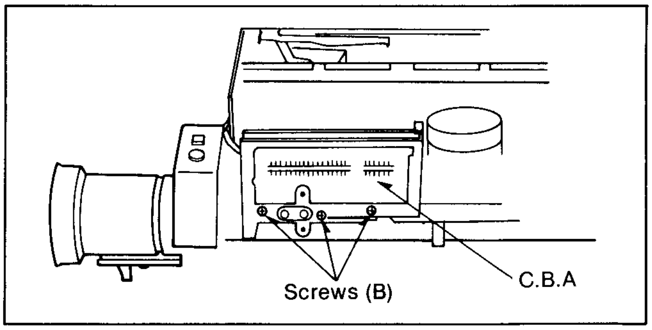

Screws (B)
C.B.A

Fig.D26

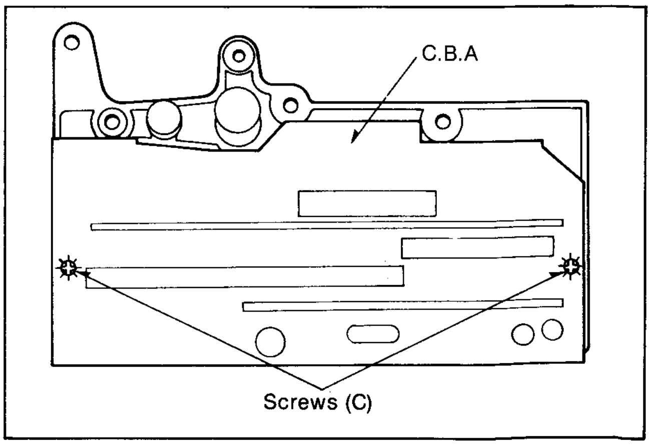

C.B.A
Screws (C)

Fig.D27

17.Removal of the Head Amp unit and Audio unit

(1) Remove 3 screws (D) and remove the Head Amp unit and Audio unit.
(2) Remove the Clamper and disconnect P4001, P4002, P4003 and P4004.
(3) Disconnect P5001 and P5002.

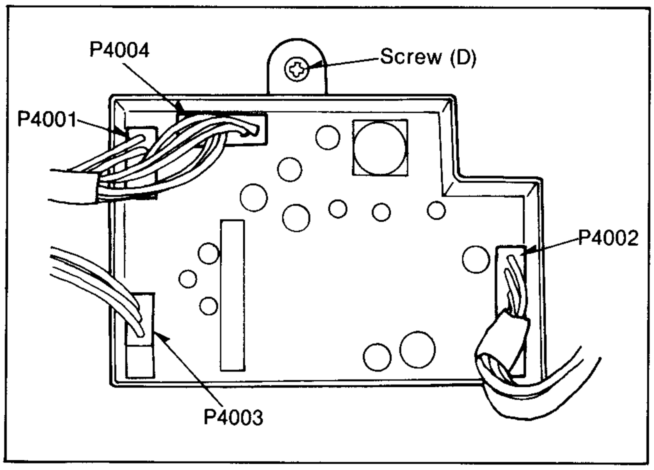

P4004
Screw (D)
P4001
P4002
P4003

Fig.D28

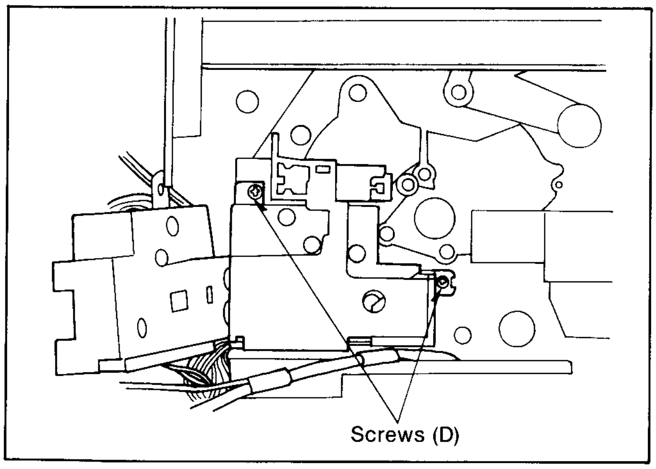


Fig.D29

18.Removal of Camera Sensor C.B.A.

(1) Remove a screw (E) and disconnect P501.
(2) Remove the Camera Sensor C.B.A.

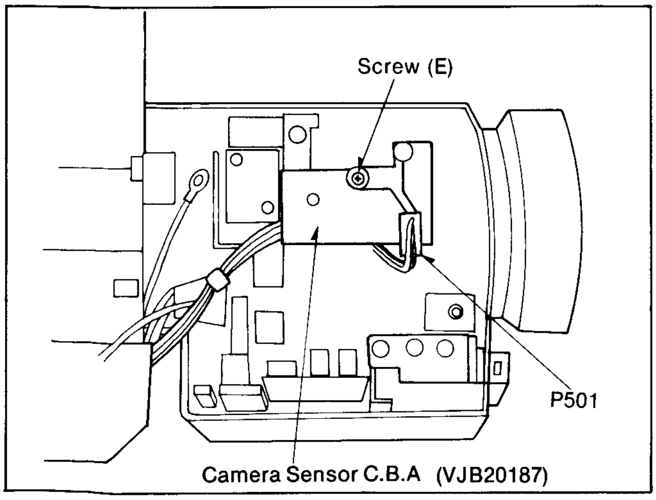

Screw (E)
P501
Camera Sensor C.B.A (VJB20187)

Fig.D30

19.Removal of the Camera unit

(1) Remove 5 screws (F) and disconnect the P601 and P2.
(2) Disconnect 3 connectors P201, P401 and P01.

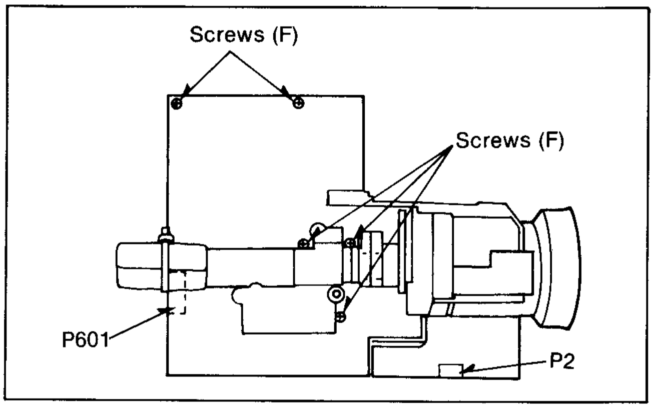

Screws (F)
Screws (F)
P601
P2

Fig.D31

20.Removal of the Camera C.B.A.
(1) Remove 2 screws (G).

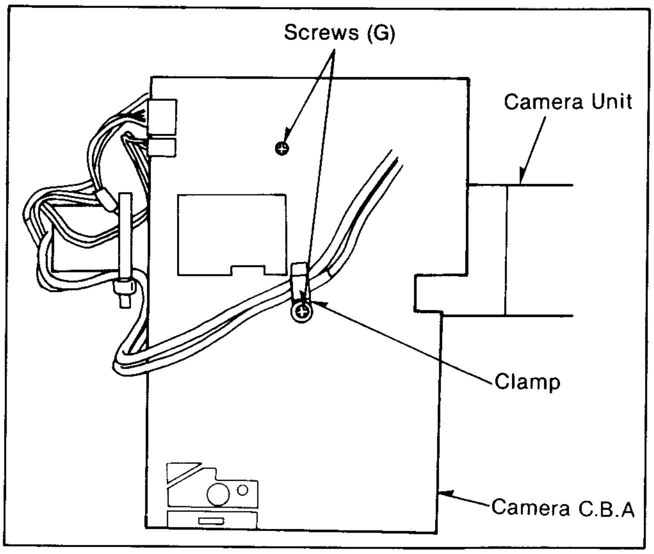

Screws (G)
Camera Unit
Clamp
Camera C.B.A

Fig.D32

2-2. REPLACEMENT

2-2-1. REPLACEMENT OF PICK-UP TUBE

1.REMOVAL OF THE PICK-UP TUBE
(1) Remove the camera unit from the VTR unit. (Refer to the DISASSEMBLY SECTION.)
(2) Unscrew 5 screws (H) and (I), and remove the coil holder and shield plate.

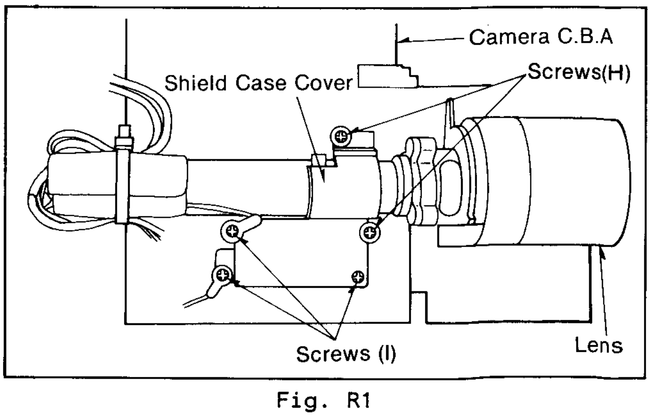

Camera C.B.A
Shield Case Cover
Screws(H)
Screws (I)
Lens

Fig. R1

(3) Unsolder the target lead "A".

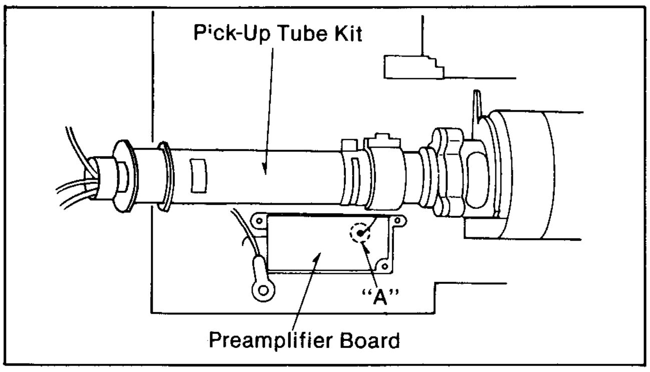

Pick-Up Tube Kit
"A"
Preamplifier Board

Fig. R2

(4) Disconnect the pick-up tube socket and bais light assembly by pulling them backward.
(5) Remove the crystal holder.
(6) Loose the clamp screw (J) and remove the pick-up tube from the deflection yoke assembly.

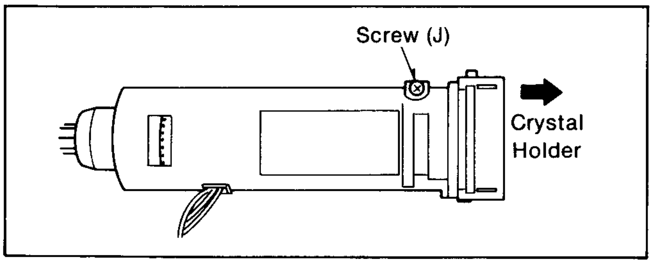

Screw (J)
Crystal
Holder

Fig. R3

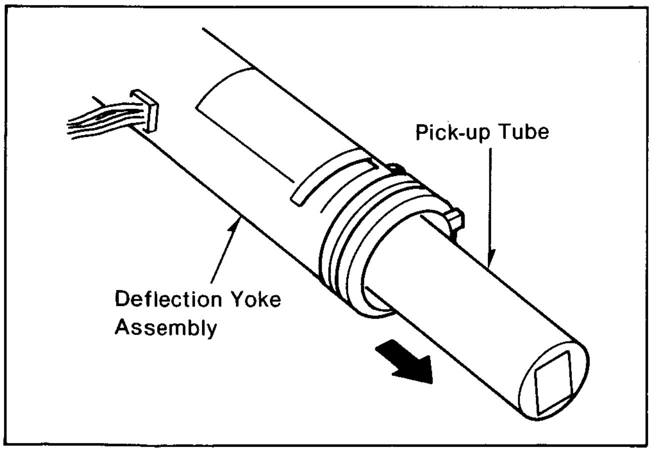

Pick-up Tube
Deflection Yoke
Assembly

Fig. R4

Note:
Do not touch the pick-up tube surface when removing.

2.INSTALL OF THE PICK-UP TUBE

(1) Install the new pick-up tube (S4161P) in the deflection yoke assembly.

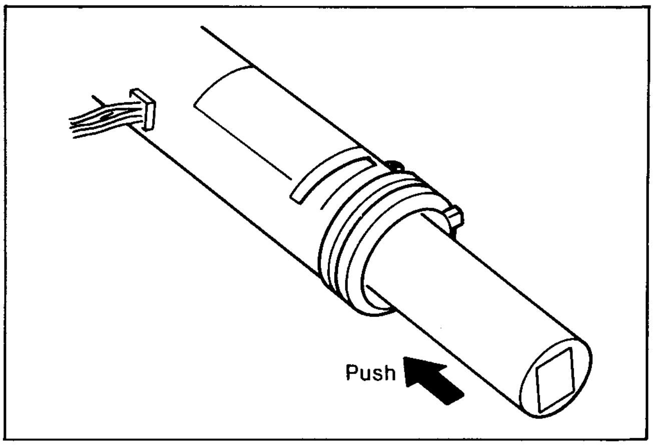


Fig. R5

(2) Line up the plastic tab on the deflection yoke assembly with the silver line on the face of pick-up tube as shown below.

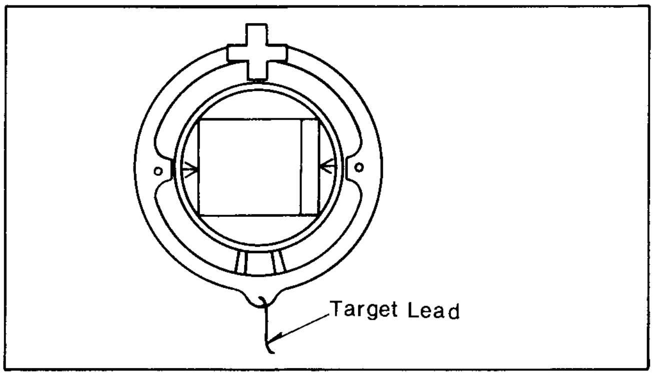

Target Lead

Fig. R6

(3) Push the pick-up tube in the deflection yoke assembly.
(4) Reverse the previous steps.

3.ADJUSTMENT AFTER PICK-UP TUBE REPLACEMENT
After replacement of the pick-up tube, readjust the Electric adjustment (refer to CAMERA Adjustment flow chart)

2-2-2. REPLACEMENT OF LENS UNIT

1. REPLACEMENT OF LENS UNIT.

(1) Unscrew 3 screws (K) and then remove the lens unit.

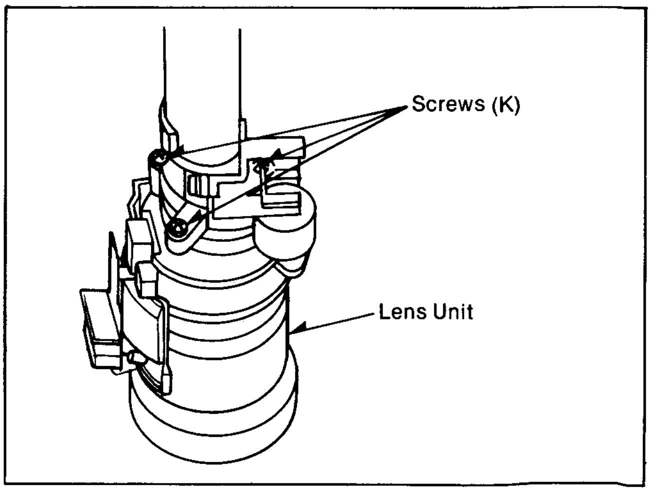

Screws (K)
Lens Unit

Fig. R7

(2) Install the new lens unit, using lens cleaning paper to keep the lens clean.
(3) Reverse the previous steps.

2.REPLACEMENT OF IRIS MOTOR UNIT

(1) First remove the lens unit from chassis.
(2) Remove the 4 screws (L) and then remove the iris motor unit.
(3) Install the new iris motor unit.
Before assembly of the iris motor unit to the chassis, confirm that there are no dust on the iris motor unit.
(4) Reverse the previous steps.
(5) After replace the iris motor unit adjust the ALC/AGC adjustment (refer to CAMERA Adjustment Item 16).

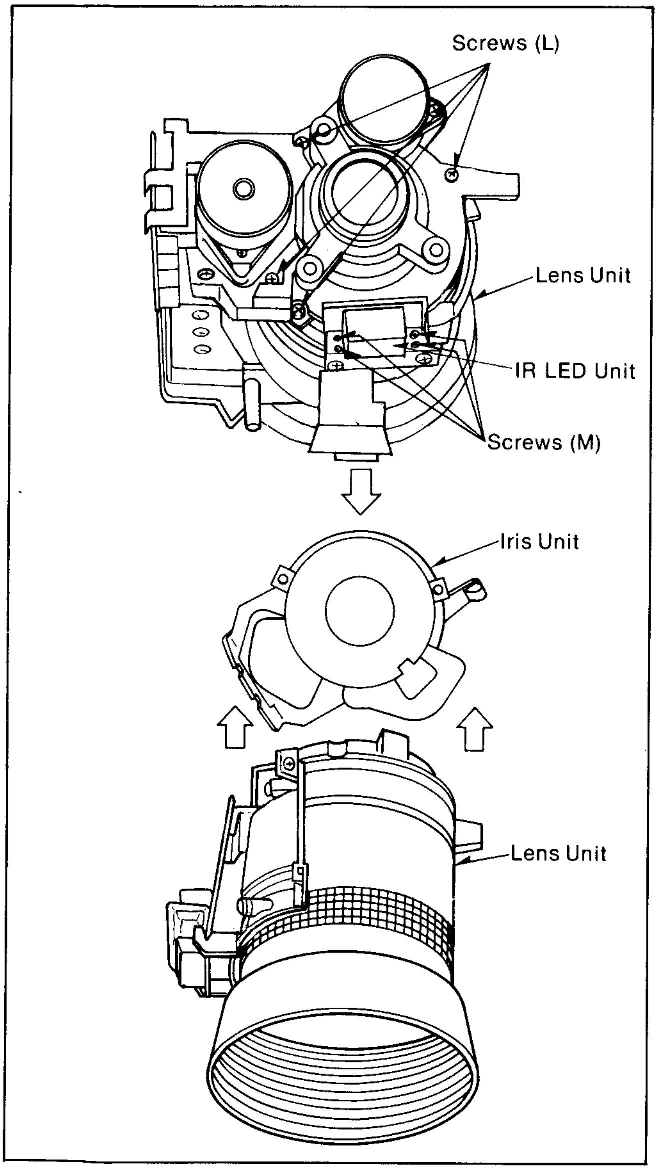

Screws (L)
Lens Unit
IR LED Unit
Screws (M)
Iris Unit
Lens Unit

Fig.R8

3.REPLACEMENT OF IR LED UNIT.

1.Remove 4 screws (M) and remove the IR LED unit. Do not loose the other screws.
When reinstalling, adjust the IR LED POSITION adjustment. (Refer to AF LED Position adjustment)

4.REPLACEMENT OF PSD UNIT and ENCORDER UNIT

(1) Remove the 4 screws (N) and remove the Lens angle (1) after removing the Camera sensor C.B.A. (refer to 2-1-2 Item 18)
(2) Remove the 3 screws (O) and remove the Lens angle (2) and AF Lens cover.

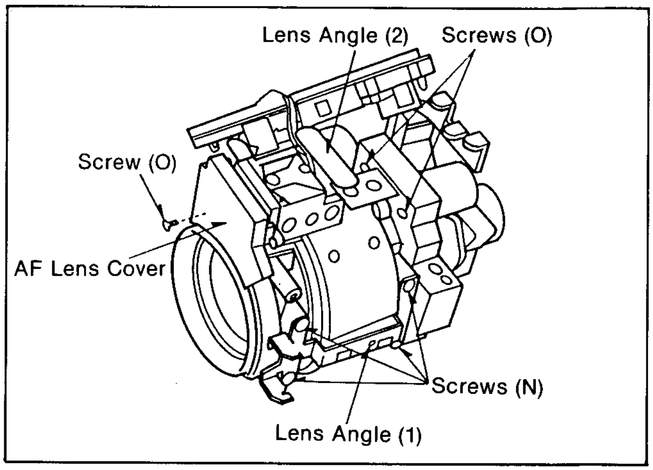

Lens Angle (2)
Screws (O)
Screw (O)
AF Lens Cover
Screws (N)
Lens Angle (1)

Fig.R9

(3) Remove the 2 screws (P) and remove the PSD unit. Do not loose the other screws.
When reinstalling, adjust the AF Receiver Adjustment (1), (2).

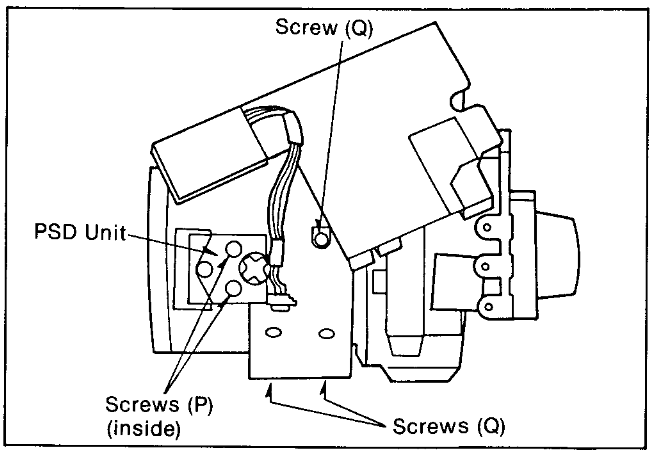

Screw (Q)
PSD Unit
Screws (P)
(inside)
Screws (Q)

Fig.R10

(4) Remove the 3 screws (Q) and remove the Encorder unit. Do not remove the other screws. When reinstalling, adjust the AF Encorder position Adjustment.
(5) Removal of Zoom Motor.
Remove the 2 screws (R) and remove the Zoom Motor.

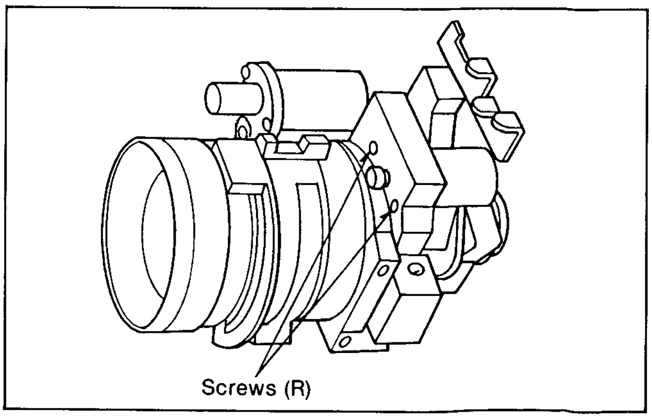


Fig.R11

2-2-3. REPLACEMENT OF DD CYLINDER UNIT

Work with extreme care when removing or replacing the DD cylinder unit.
Do not touch video heads during servicing.

(1) Remove the screw (S) to take the Earth Holder Unit out.

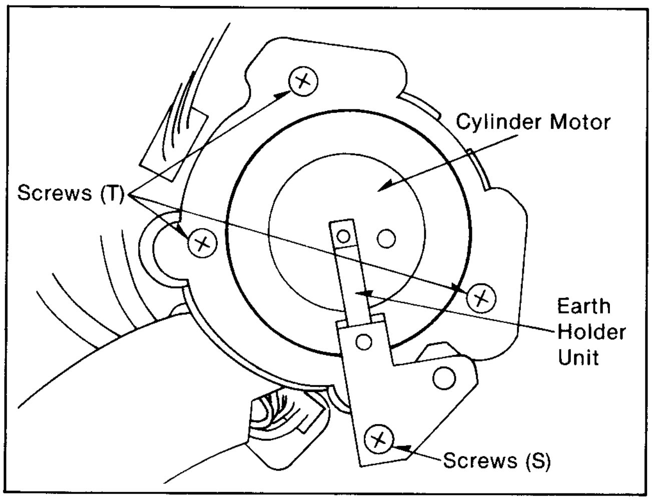

Cylinder Motor
Screws (T)
Earth
Holder
Unit
Screws (S)

Fig.R12

(2) Disconnect 3 connectors (P2001, P2002 and P5001).
(3) Remove the 3 screws (T) to take DD cylinder unit out.

Note:
Since there is very little clearance between DD cylinder unit gently and carefully.

(4) Reinstall the new cylinder unit, tighten the 3 screws (U). Then re-connect 3 connectors.

Note:
1. Gently rub the video head in direction of tape travel with Head Cleaning Stick.
2. After replacement, confirm performance. If any further maintenance is required, perform "TAPE INTER-CHANGEABILITY ADJUSTMENT".
3. After replacing the mew DD cylinder unit, check to see if the Earth Holder Unit is correctly set in a position within 2mm to the right from the centre of the cylinder shaft as shown below.
4. Never install the Earth Holder Unit to any position to left from the centre of the cylinder shaft, but always within a maximum of 2mm to the right of the centre of this shaft.
5. Do not touch Mounting Base with screws on the DD cylinder unit.

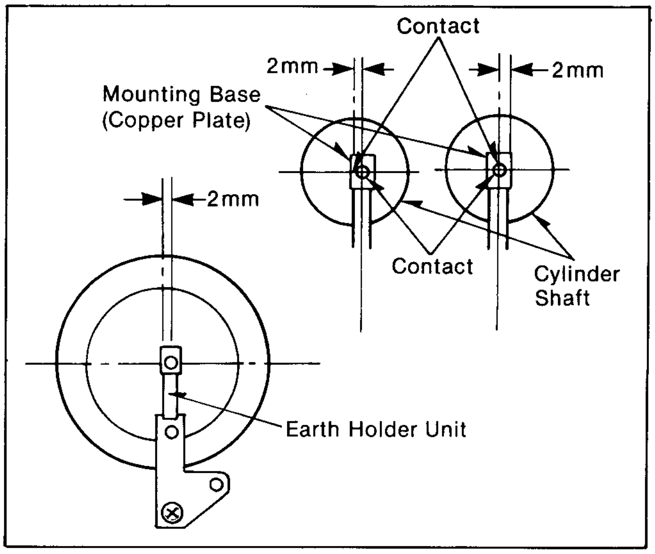

Contact
2mm
2mm
Mounting Base
(Copper Plate)
2mm
Contact
Cylinder
Shaft
Earth Holder Unit

Fig.R13

2-2-4. REPLACEMENT OF UPPER CYLINDER UNIT

Be sure to observe the following procedures when replacing Upper Cylinder unit.

(1) REMOVING THE UPPER CYLINDER UNIT
a. Remove 2 screws as shown in Fig.R14.
b. Unsold 8 soldered portions indicated by arrows on Circuit Board.
c. Remove the Upper Cylinder Unit by lifting it upwards.

Note:
Solderd portion can be easily removed by using solder sucking wire, etc.

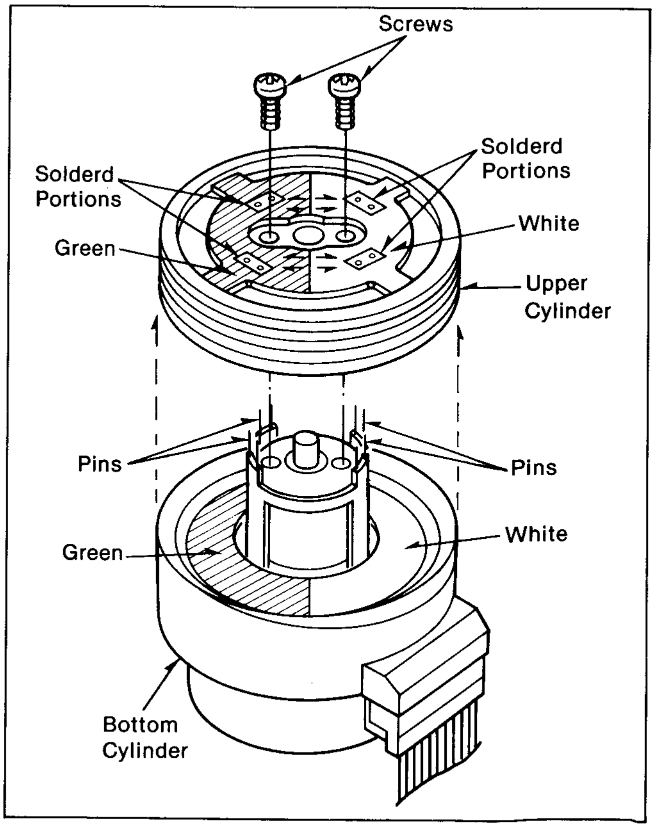

Screws
Solderd
Portions
Solderd
Portions
White
Green
Upper
Cylinder
Pins
Pins
White
Green
Bottom
Cylinder

Fig.R14

(2) REINSTALLING THE UPPER CYLINDER UNIT

The upper Cylinder Unit can be reinstalled by reversing the removal procedure. However, when reinstalling, it must be extremly careful so that both the white and green portions of C.Board on the Upper Cylinder Unit will correctly match the white and green portions of the circuit Board on Bottom cylinder as shown in Fig.R15.

Note:
If the Upper Cylinder unit is reversely installed, no colour will appear when playing back a pre-recorded tape.

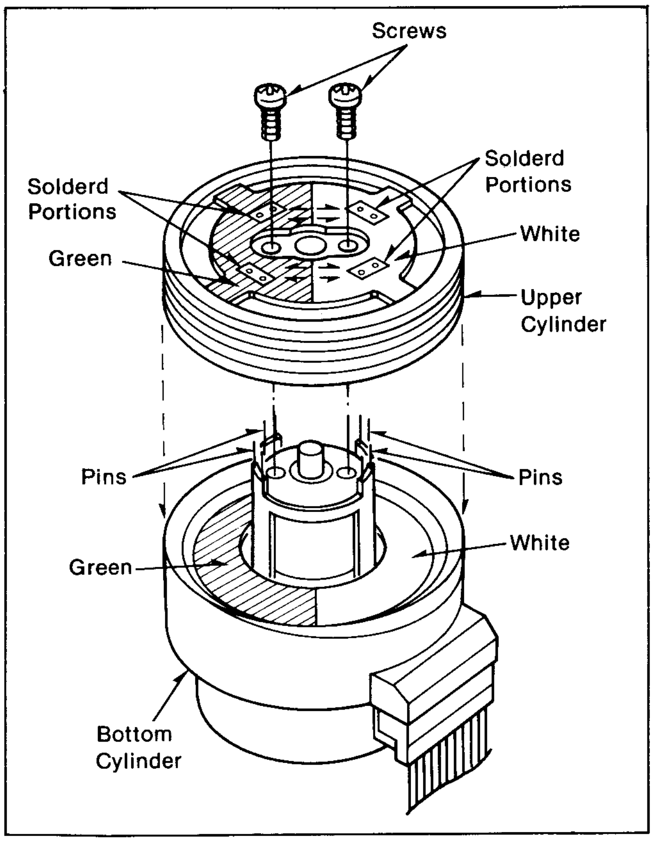

Screws
Solderd Portions
Solderd Portions
White
Green
Upper Cylinder
Pins
Pins
White
Green
Bottom Cylinder

Fig.R15

2-2-5. REPLACEMENT OF CAPSTAN STATOR UNIT

- Equipment Required:
  Reel Table Height Gauge (VFK0190)
- Specification:............0.5+-0.05mm

(1) Remove the 2 screws and take belt cover out. After that remove the capstan belt.
(2) Tighten the Thrust Adjust Screw fully and pull the capstan rotor.

Note:
In this time pay attention not to lose 2 Dust Seals.

(3) Replace the new rotor inserting 2 Dust Seals.

Note:
1. Pay attention to the replaced new rotor not to shock because of magnet absorbtion. So hold the rotor firmly and replace it carefully.
2. In this replacement, do not touch the Capstan shaft by any hard material like drivers or tweezers.

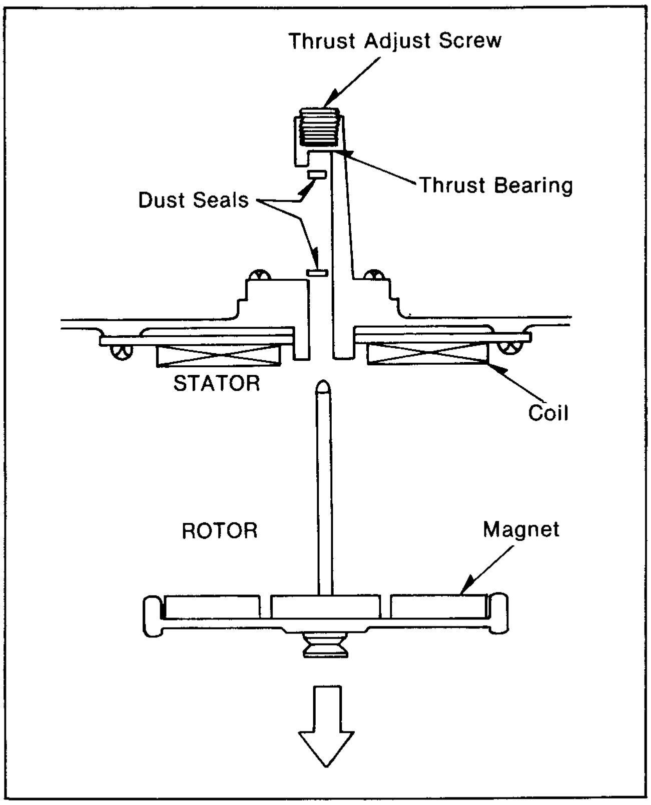

Thrust Adjust Screw
Thrust Bearing
Dust Seals
STATOR
Coil
ROTOR
Magnet

Fig.R16

(4) After replacement, wipe off the Capstan shaft to remove oil, grease or dust.
(5) Unscrew Thrust Adjust Screw till the rotor is just touching to the stator.
(6) Turn this mechanism upside down and place the Reel Table Height Gauge so that the gauge fits to the chassis correctly, and read the height.
(7) Tighten and adjust the Thrust Adjust Screw so that the height difference just meets in the specification (0.5+-0.05mm) reading the height from the gauge.

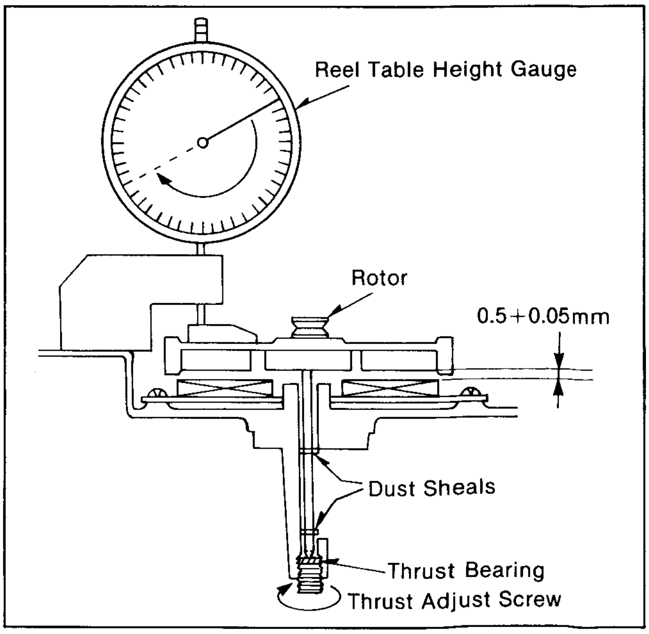

Reel Table Height Gauge
Rotor
0.5+0.05mm
Dust Sheals
Thrust Bearing
Thrust Adjust Screw

Fig.R17

Note:

If the Thrust Adjust Screw is fully opened, you have to pay attention not to lose Thrust Bearing.
When you fix it, confirm that the direction of Thrust Bearing is correct as shown below.

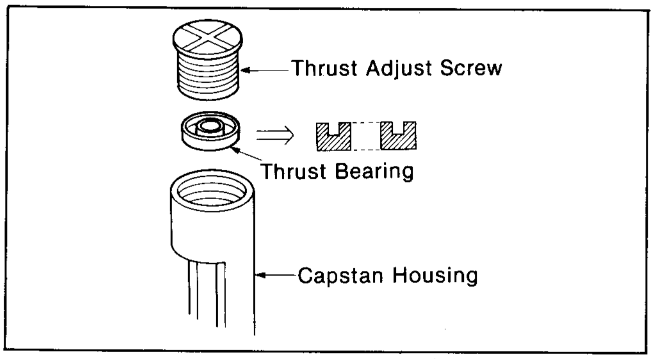

Thrust Adjust Screw
Thrust Bearing
Capstan Housing

Fig.R18

2-2-6. REPLACEMENT OF TENSION BAND

(1) Remove the cassette compartment.
(2) Remove a retaining ring and take out a Rew Arm (A) Unit.
(3) Remove a retaining ring and a shap washer and take out a tension Band Unit.

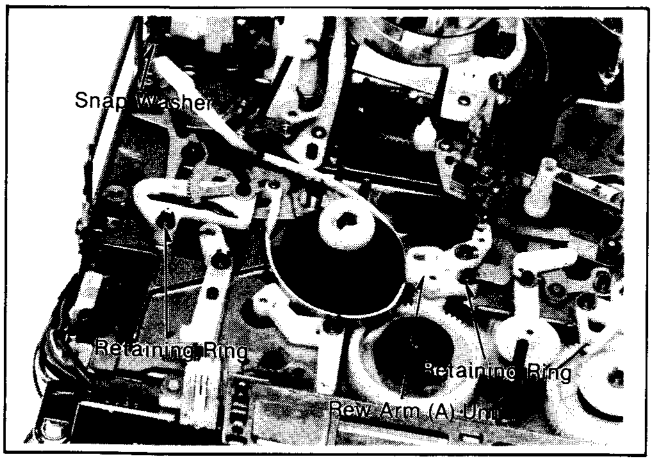

Snap Washer
Retaining Ring
Retaining Ring
Rew Arm (A) Unit

Fig.R19

(4) Remove a Tension Band from Band Release Arm and Tension Arm Unit.

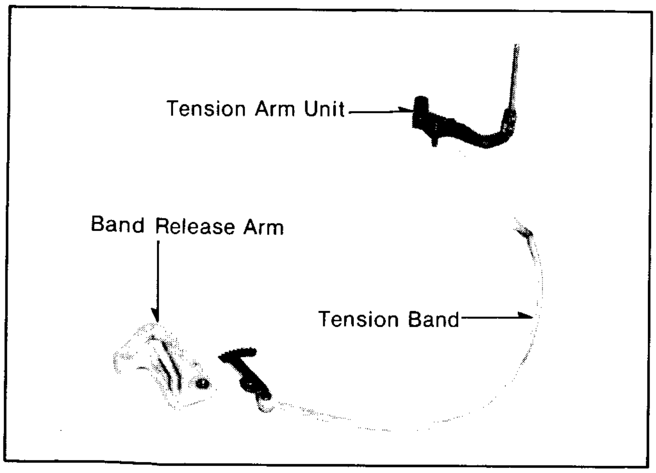

Tension Arm Unit
Band Release Arm
Tension Band

Fig.R20

(5) Replace a new Tension Band by proceduring reverse steps shown above.

2-3. MECHANICAL ADJUSTMENT PROCEDURES

2-3-1. PROCEDURE FOR CLEANING OF UPPER CYLINDER UNIT

(1).Position the video head to clean and hold the upper cylinder to keep it from turning while cleaning.
(2).Gently rub the video head in direction of tape travel whith Head Cleaning Stick.
(3).Repeat for the other three video heads.

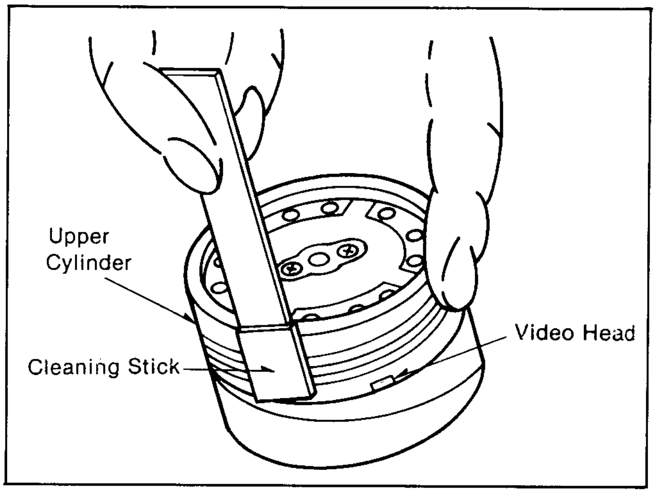

Upper Cylinder
Video Head
Cleaning Stick

Fig. M1

Note:
(1) Do not rub vertically.
(2) Do not apply any pressure to heads.
If contamination is not easily removed, continued gentle wiping will usually remove the substance.

2-3-2. CONFIRMATION OF BRAKE TORQUE

- Equipment Required:
  Dial Torque Gauge
  Adaptor for Gauge
- Specification:---------15~55g-cm(stop)

(1) Remove the cassette compartment by unscrewing 4 screws.
(2) Attach the adaptor to the torque gauge and place the unit in STOP mode.
(3) Place the torque on the reel table. The weight of gauge should not rest on the reel table.

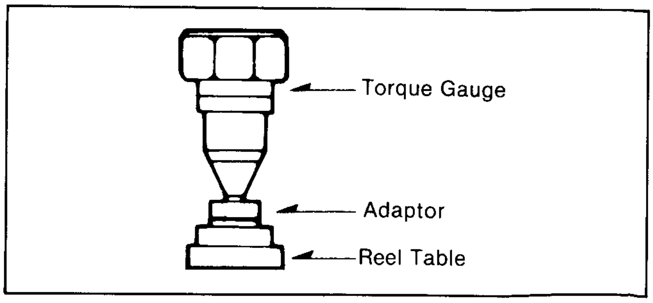
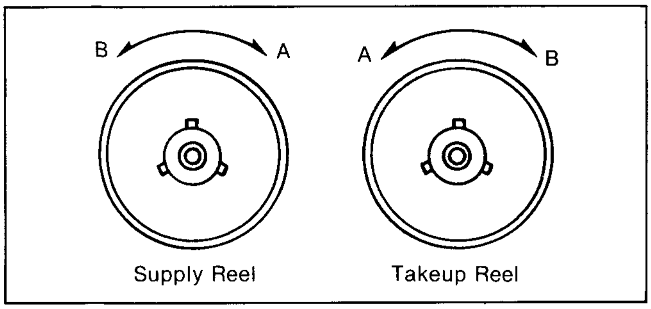

Torque Gauge
Adaptor
Reel Table

Fig. M2

(4) Turn torque gauge in either direction indicated in the Fig.M2, and read the gauge when the brake begins slipping.

Note:

If proper brake torque can not be obtained,check the both take-up and supply clutch gear.


B
A
A
B
Supply Reel
Takeup Reel

	A	B
Takeup	15~55g-cm	15~55g-cm
Supply	15~55g-cm	15~55g-cm

Fig. M3

2-3-3. TENSION POST POSITION ADJUSTMENT

- Specification :---------2.4mm~2.9mm

(1) Remove the Cassette Up unit by unscrewing 4 screws. (Refer to the disassembly procedures titled in Removal of the Cassette Compartment).
Place the unit in Play mode by rotating Drive Gear (A) in clockwise shown below.

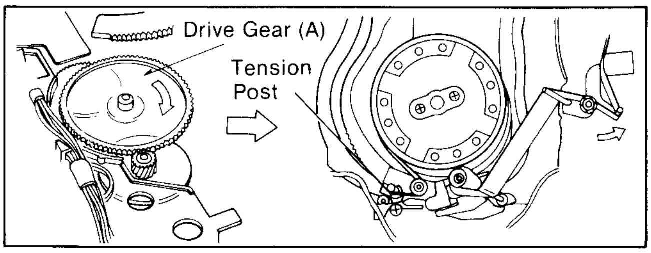

Drive Gear (A)
Tension
Post

Fig. M4

Note:
In this case, make sure that the power is not applied.

(2) Loosen the screw (A) a little bit and adjust the Tension Post adjustment plate so that the "Distance (A)" shown below becomes just meet in the specification (2.4m~2.9mm).
(3) Tighten the screw (A) to fix it.

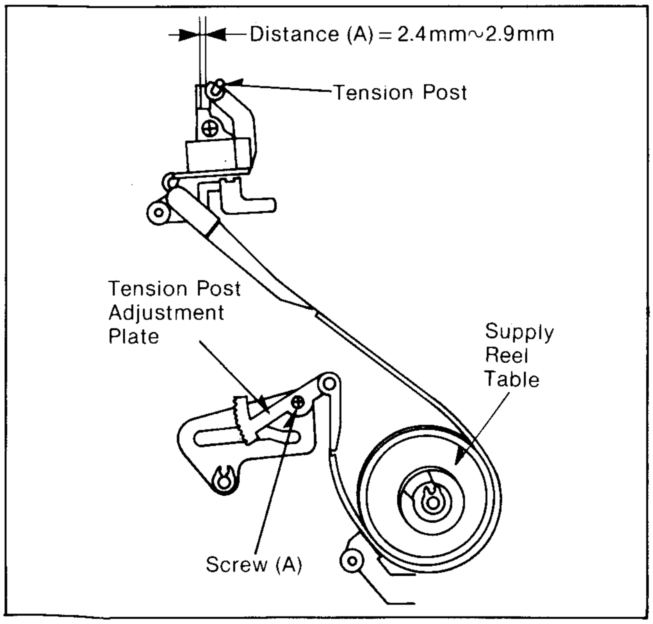

Distance (A) = 2.4mm~2.9mm
Tension Post
Tension Post
Adjustment
Plate
Supply
Reel
Table
Screw (A)

Fig. M5

2-3-4. BACK TENSION ADJUSTMENT

(1) SYMPLIFIED BACK TENSION ADJUSTMENT

(1).Place the unit in Play mode as the same way described in previous procedure, Tension Post Position Adjustment item 2.
(2).Loosen the screw (B) a little bit and adjust the Tension Adjustment piece so that the second cog of Tension Adjustment piece comes just stright to its vertical direction as shown below.
(3).Tighten the screw (B) to fix it.

Note:
By this simplified adjustment, back tention comes just in specification normaly in spite of parts tolerance.

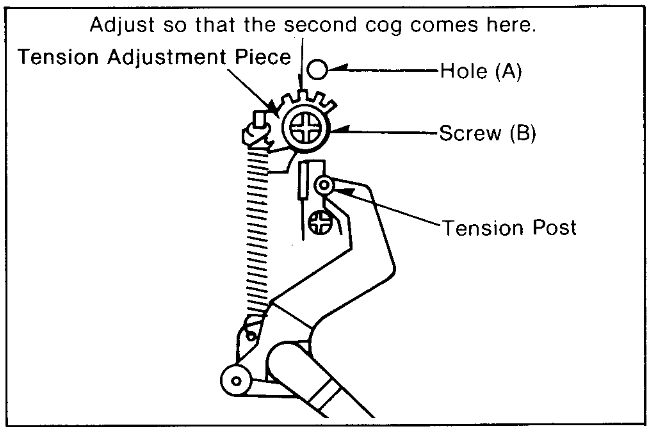

Adjust so that the second cog comes here.
Tension Adjustment Piece
Hole (A)
Screw (B)
Tension Post

Fig.M6

(2) COMPLETE BACK TENSION ADJUSTMENT

For the strict and accurate back tension adjustment, however, following procedures should be done.

- Equipment Required:
  Back Tension Meter
  Fine Adjustment Screwdriver
  VHS Cassette Tape (E-120)
- Specification:--------------19~23g

(1).Playback the cassette tape recorded in SP mode from its beginning and wait until tape running has stabilized. (for approx. 10 to 20 seconds)
(2).Loosen the screw (B) and fit the Fine Adjustment Screw driver by putting into its small Hole (A).
(3).Move the Tension Adjust piece in either of direction.
(4).Upon completion of adjustment, tighten the Screw (B).
(5).Confirm the back tension is in the specification by using Back Tension Meter with great care to avoid touch to any parts and keeping in good condition with tape while measuring.

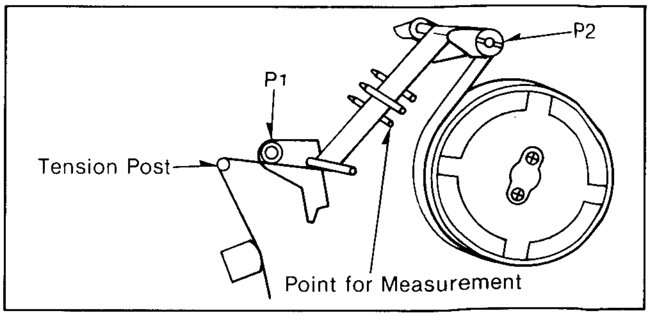

P2
P1
Tension Post
Point for Measurement

Fig.M7

2-3-5. REEL TABLES HEIGHT ADJUSTMENT

- Equipment Required:
  Post Adjustment Plate
  Reel Table Height Gauge
- Specification-----------0~-0.15mm

Note:

Cut-out on Post Adjustment Plate is reference of reel table height and their height is measured based on this reference.

1. Place the post adjustment plate on the reels, and put the gauge on the plate. Set the gauge to zero "0" with the foot scraper of the gauge touching the cut-out portion of the plate.

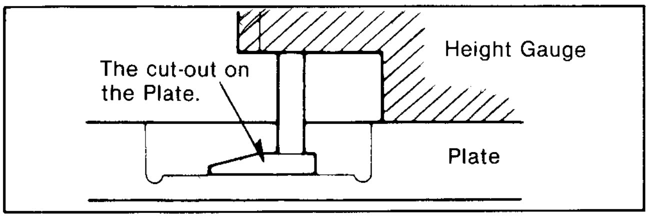


Fig. M8

2. Then measure the height of reel table and confirm the difference just performed in former step as shown below. Do the same way for the other reel table.

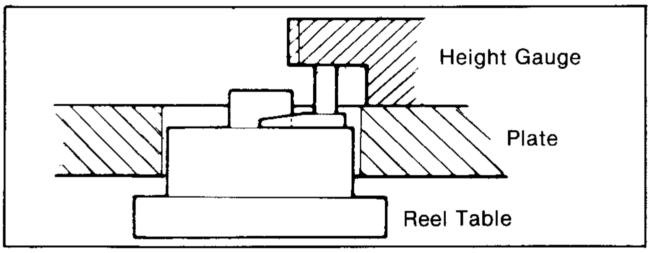


Fig. M9

3. If a height difference in readings between the cut-out portion of plate and reel tables is not 0~-0.15mm (higher or lower), adjust the height of the reel to obtain specified height.
4. For adjustment add or reduce a washer.

2-3-6. HEIGHT ADJUSTMENT OF TAPE GUIDE POSTS

- Equipment Required:
  Hex Wrench (VFK0305:0.71mm)
  Post Adjustment Plate
  Reel Table Height Gauge
  Nut Driver
  Post Adjustment Screwdriver

(1). Remove the cassette compartment from the mechanical chassis and the cylinder barrier.

(2). Put the post Adjustment plate on the chassis.

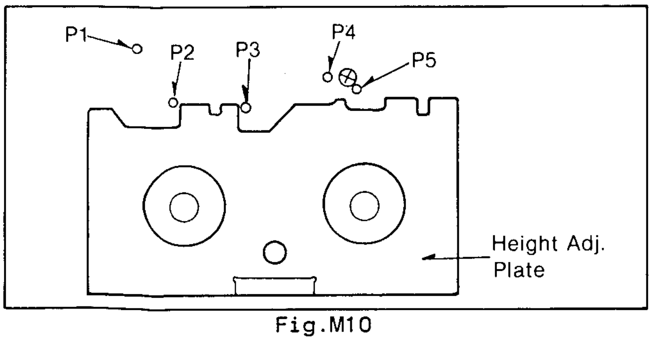


Fig.M10

(3). First install the post adjustment plate and move all posts if required so that they are just in the position for stop mode.
(Lower end of post, tape guide, should be lower than foot scraper of fixture.)
Loosen a hex screw located on the lower portion of posts (P2 & P3) then turn the top of the posts with post adjustment screwdriver.

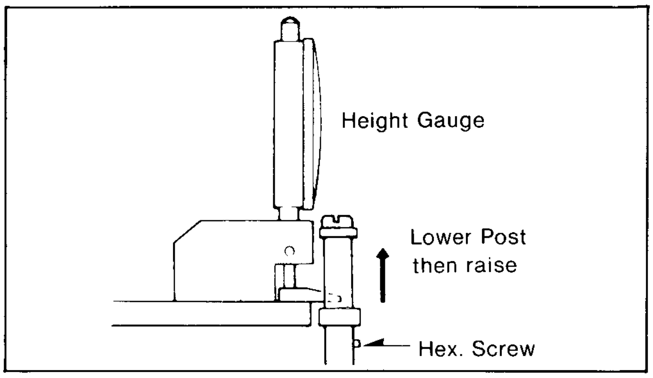


Fig. M11

(4). Place the height gauge on the adjustment plate and place the foot scraper of gauge to the post.

(5). Set the height gauge to zero and slowly raise the post until it just touches the foot scraper of gauge. For adjustment of P1, P4 & P5, use the nut driver.

Note:

Upon completion of adjustment, tighten hex. Screws on P2 and P3 and install the post cap on P5. When the post cap on P5 is reinstalled, orient it as shown below viewing from the direction indicated by the arrow.

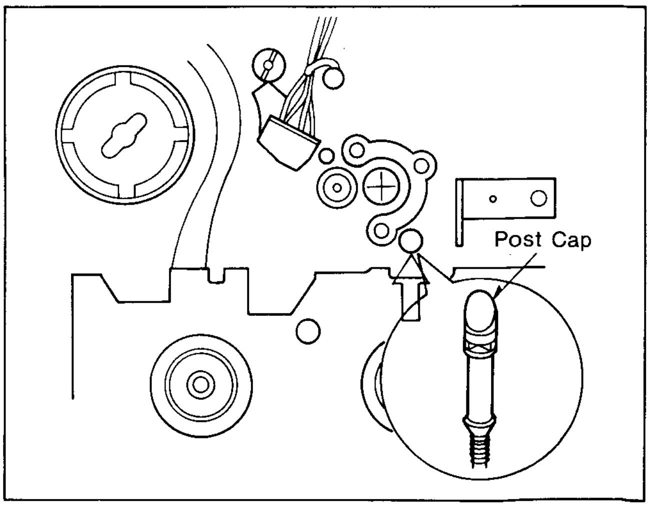


Fig. M12

(6). Reinstall the cassette compartment.

(7). Play back a normal cassette tape and make sure that the edges of the tape are not curling along with the edge of the posts P1,P2,P3,P4 and P5 post as shown in next page.

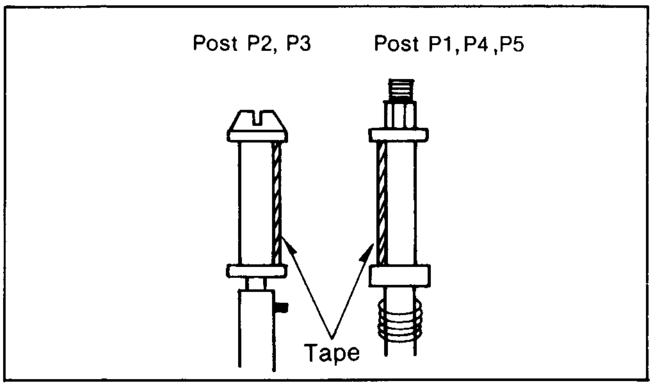

Post P2, P3
Post P1,P4,P5
Tape

Fig. M13

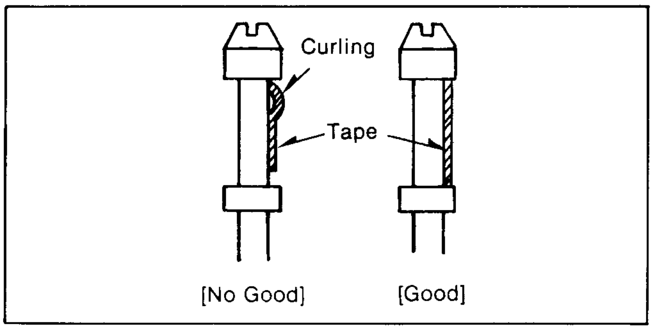

Curling
Tape
[No Good]
[Good]

Fig. M14

(8).If curling appears, readjust each post.

2-3-7. TAPE INTERCHANGEABILITY ADJUSTMENT

Note:

To perform these adjustment/confirmation procedures, make sure that the tracking control is set into the detent (fixed) position.

- Equipment Required:
  Alignment Tape (VFJ8125H3F)
  Post Adjustment Screwdriver
  H-Position Adjustment Screwdriver
  Hex. Wrench (VFK0305:0.71mm)
  Nut Driver

(1) CONFIRMATION/ADJUSTMENT OF ENVELOPE OUTPUT

(1).Connect the oscilloscope to the output of the Head Amp as shown below.

Note:

Head Amp output and the head switching pulse input for triggering the oscilloscope are shown in the Luminance Process Block Diagram.

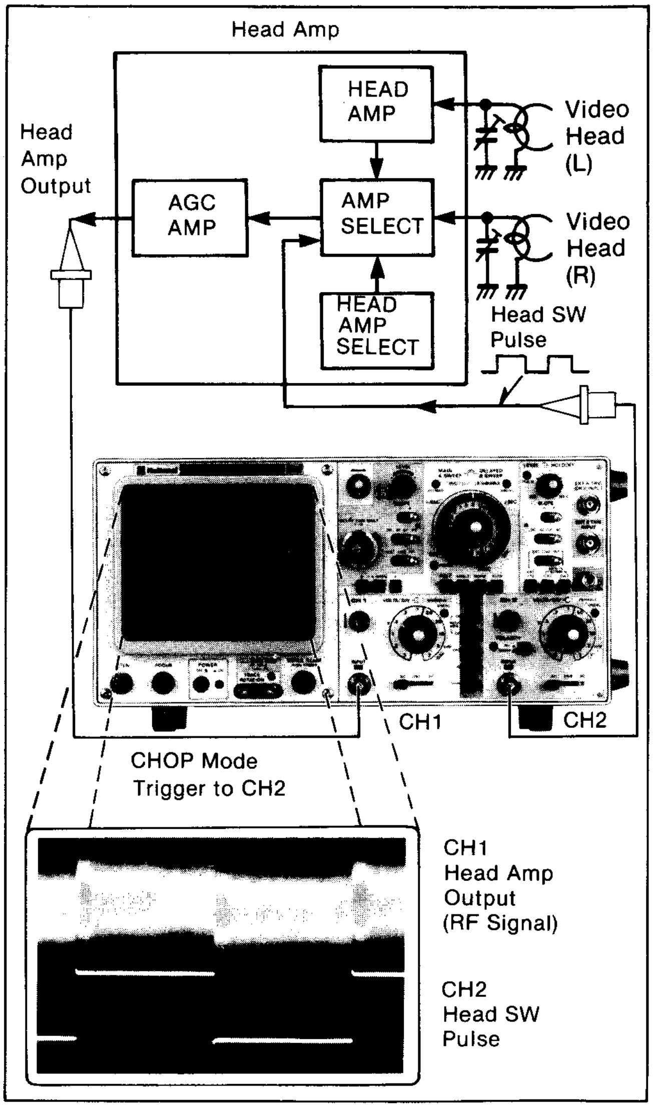

Head Amp
HEAD AMP
Video Head (L)
Head Amp Output
AGC AMP
AMP SELECT
Video Head (R)
HEAD AMP SELECT
Head SW Pulse
CH1
CH2
CHOP Mode
Trigger to CH2
CH1 Head Amp Output (RF Signal)
CH2 Head SW Pulse

Fig. M15

(2).Playback the monoscope portion of the alignment tape and adjust posts P2 and P3 while watching the scope display so that RF envelope on the scope becomes as flat as possible.

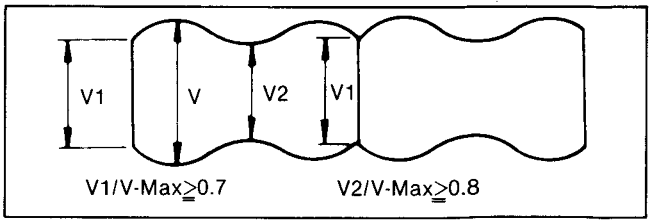

V1
V
V2
V1
V1/V-Max≥0.7
V2/V-Max≥0.8

Fig. M16

(3).If scope display is as follows, adjust the height of P2 shown below.

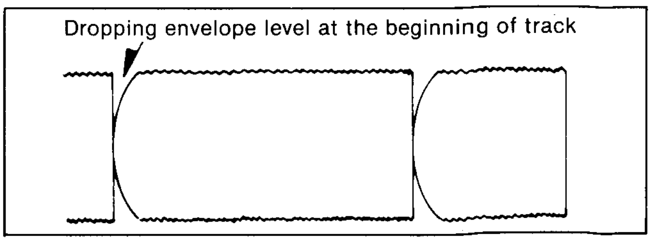

Dropping envelope level at the beginning of track

Fig. M17

(4).If the scope display is as follows, adjust the height of P3 shown below.

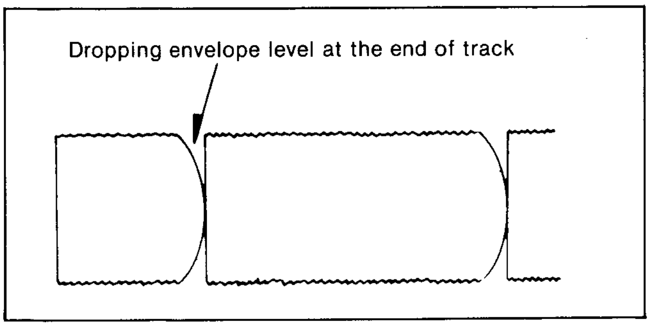

Dropping envelope level at the end of track

Fig. M18

(5).When P2 and P3 posts are adjusted correctly the scope display becomes as shown below.

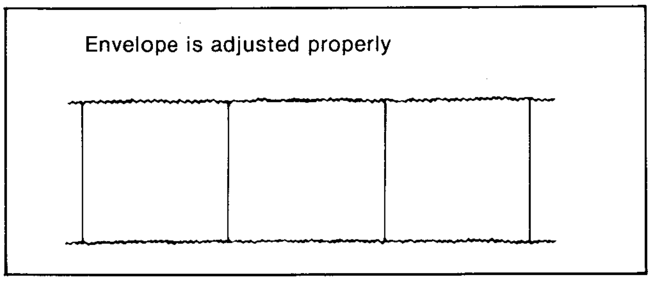

Envelope is adjusted properly

Fig. M19

(6).When adjustment is required, turn slowly and wait for servo lock. Be sure the tape travel contacting with the post is as shown below.

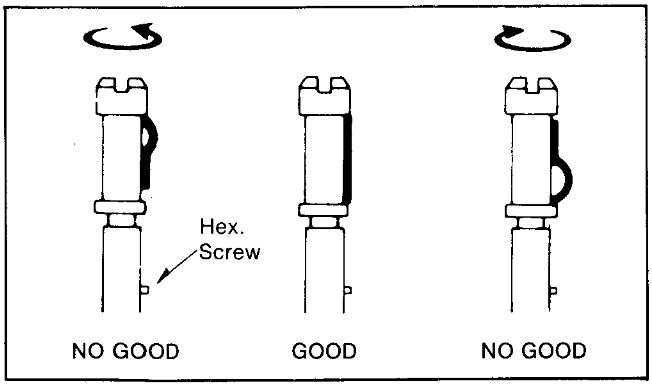

Hex.
Screw
NO GOOD
GOOD
NO GOOD

Fig. M20

(2) CONFIRMATION OF A/C HEAD HEIGHT

Note:

Unless the A/C Head is replaced, this procedure should not be performed.

(1).Looking at the lower edge of the control head within the tape running, ensure that the lower edge of the tape runs along the lower edge of the control head. If it doesn't, slightly turn the nut (A) in either direction to correct. Clockwise to lower the head and counterclockwise to raise it.

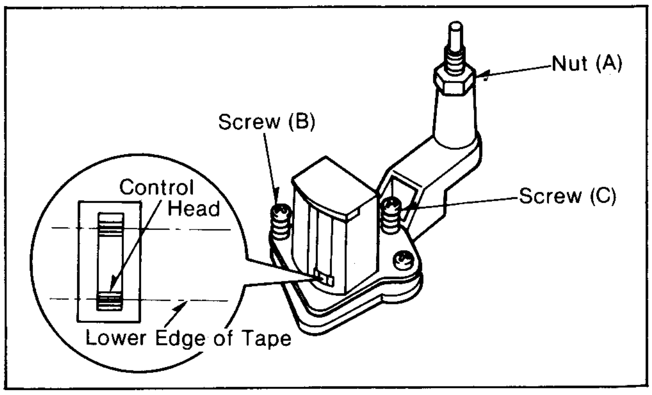

Nut (A)
Screw (B)
Screw (C)
Control
Head
Lower Edge of Tape

Fig. M21

(3) CONFIRMATION OF TILT OF A/C HEAD

This procedure should be performed after the height adjustment of P4.

(1).Play back the tape and confirm the tape runs between lower and top limiters of post. And confirm the condition of tape running.

(2).If the adjustment is required, turn counterclockwise the screw (C) so that the curling is apparent with lower edge of P4. Then turn clockwise the screw (C) so that the curling is smooth out.

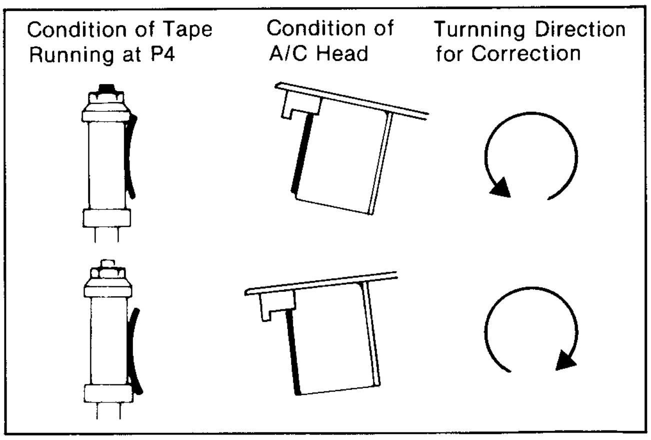

Condition of Tape Running at P4
Condition of A/C Head
Turnning Direction for Correction

Fig. M22

(4) ADJUSTMENT OF A/C HEAD HEIGHT AND AZIMUTH

(1).Connect the oscilloscope to the Audio Output on the right side of the unit.

(2).Play back the monoscope portion (6KHz, Mono) of the alignment tape.

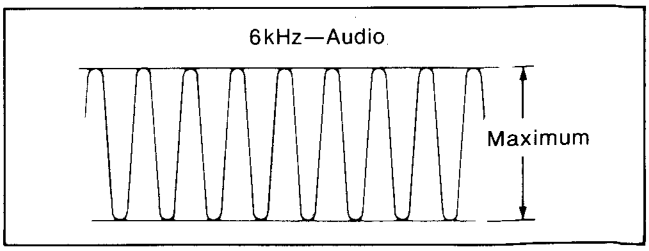

6kHz—Audio
Maximum

Fig. M23

(3).Adjust the screw (B) on the head base so the output level becomes maximum.

(5) HORIZONTAL POSITION ADJUSTMENT OF A/C HEAD

(1).Set the tracking control to the detent (fixed) portion. Connect the oscilloscope to the output of the Head Amp.
(2).Playback the monoscope portion of the alignment tape and confirm the RF signal envelope figure.
(3).If adjustment is required, insert an H-position adjustment screwdriver into the Adjustment Nut.
(4).Slowly turn the Adjustment Nut clockwise until the envelope output is maximized.

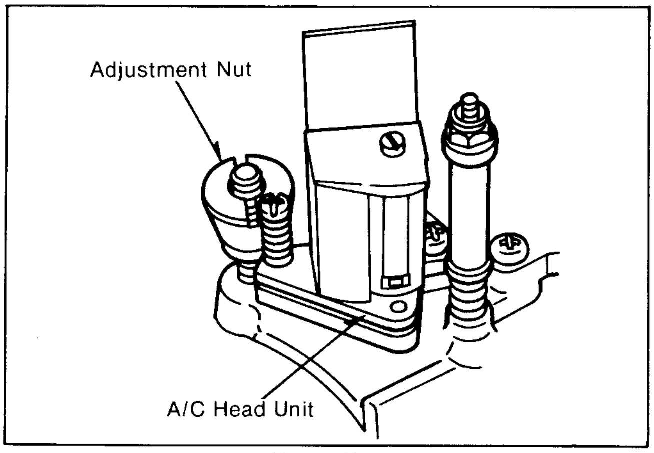

Adjustment Nut
A/C Head Unit

Fig. M24

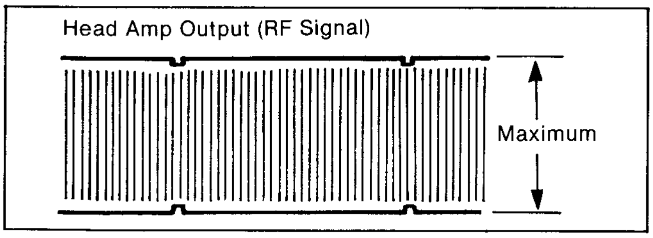

Head Amp Output (RF Signal)
Maximum

Fig. M25

2-3-8. ADJUSTMENT OF F.G. HEAD GAP

* Specification:-----------0.17~0.18mm
(1).Slightly loosen the 2 screws.
(2).Put the paper which is used for cover page of this volume into the gap between F.G.Head and Capstan rotor. (The thickness of the cover page is approx 0.17mm)
(3).After adjustment, tighten 2 screws.

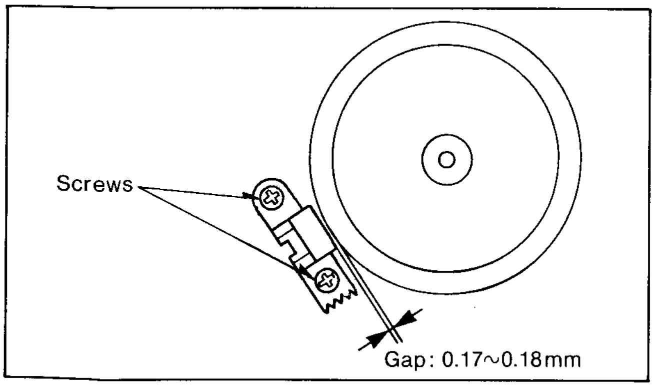

Screws
Gap: 0.17~0.18mm

Fig. M26

Note:

Do not touch the circumferential surface of rotor and keep any magnetizable material away.

2-3-9. ASSEMBLY AND ADJUSTMENT PROCEDURES OF MECHANISM

The mechanism of this model is mostly engaged to the System Control Circuit, through the mode select switch.
Therefore the relation between the mode select switch and the cam gear decides all further mechanical movement of the mechanical parts such as levers, gears, rollers and so on.
If these parts are fixed in properly, the unit will be unloaded or compulsorily stopped.
And it will result being damaged at any mechanical or electrical parts.

(1) ASSEMBLY PROCEDURES OF LOADING RINGS AND LOADING GEARS

(1).Install a Loading-Ring T (1) unit and a Loading Gear (B) so that both triangle marks meet each other as shown below.

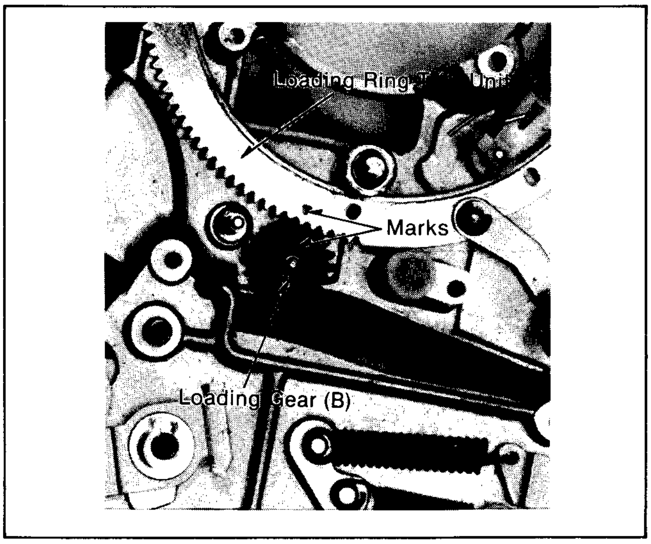

Loading Ring T Unit
Marks
Loading Gear (B)

Fig. M27

(2).Install a Loading Gear (A) and next fix a Loading Ring S (1) Unit so that the holes of Loading-Ring S(1) Unit and T(1) Unit meet each other as shown below.

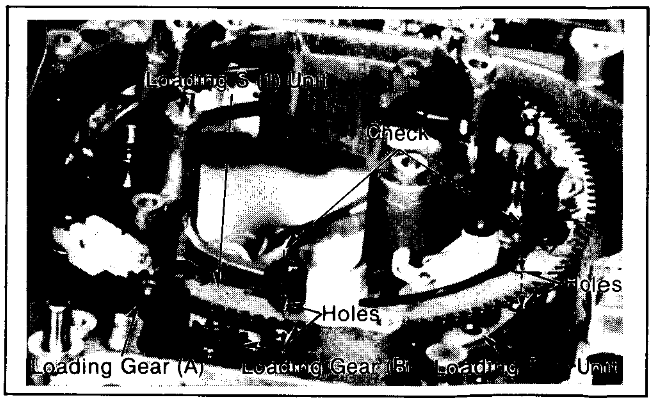

Loading S (1) Unit
Check
Holes
Holes
Loading Gear (A)
Loading Gear (B
Loading
Unit

Fig. M28

Note:

Pay attention that the washers are remaining under the loading gears or any other parts.

(3).Install a Sector Gear as shown below.

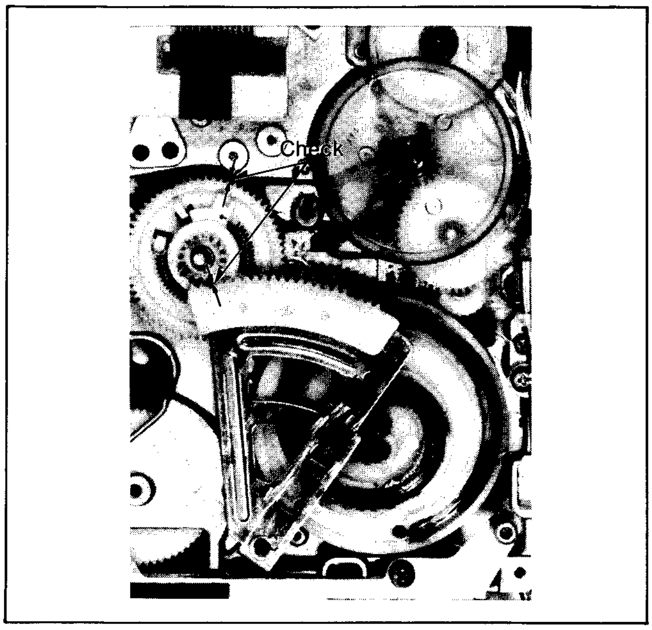


Fig. M34

(4).Fix a SG Limiter by 2 retaining rings.

(6) ASSEMBLY PROCEDURES OF MODE SELECT SWITCH

(1).Perform this procedures after confirming the complete setting of mechanical parts.
First of all, confirm that the hole on a Main Rod is meeting with a hole on a chassis.

(2).Move the moving contact of a Mode Select Switch into Stop position as shown below.

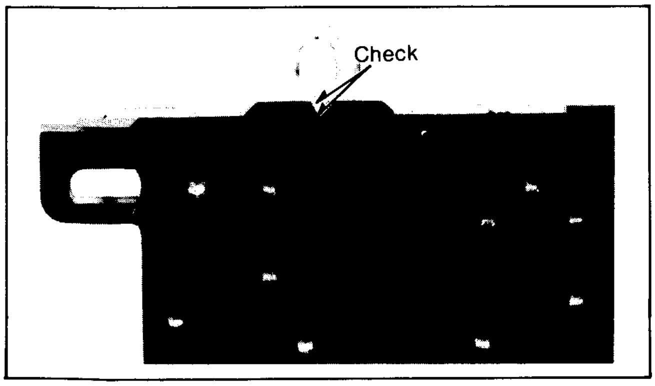


Fig. M35

(3).Install the Mode Select Switch keeping these relation written in item (1) and (2) by screwing 2 screw.

(2) ASSEMBLY PROCEDURES OF TAKE-UP LOADING GUIDE AND TAKE-UP LOADING POSTS UNIT

(1). Install Loading Guide T Unit and Take-up Post Stopper.
In that time, the small projection of a Loading Link T Unit must be inserted into a gap of Loading Guide T Unit.

(2). Fix a Take-up side Loading Post Unit holding the small projection of the Loading Link T Unit and install a T Shaft Holder Unit.

(3) ASSEMBLY PROCEDURES OF SUPPLY LOADING GUIDES AND SUPPLY LOADING POSTS UNIT

(1). Install 2 Supply Loading Guides screwing 4 screws.

(2). Slide a Supply Loading Post Unit into a gap between the Loading Guide S1 and S2 hooking a Connection Rod to a Connection Tie Unit as shown below.

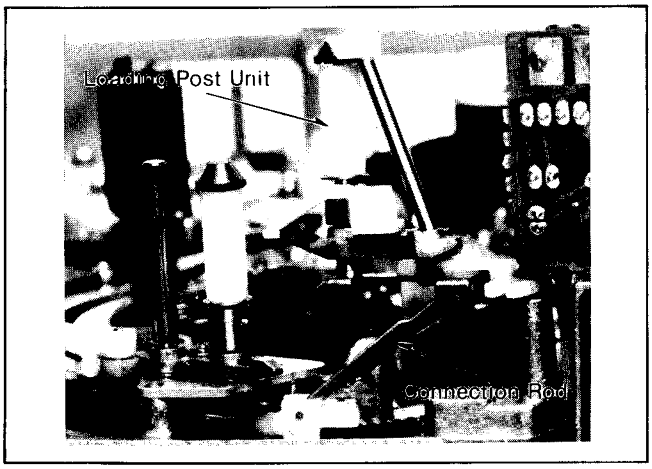


Fig. M29

(3). Set the Supply Loading Post Unit into Stop position as shown below.

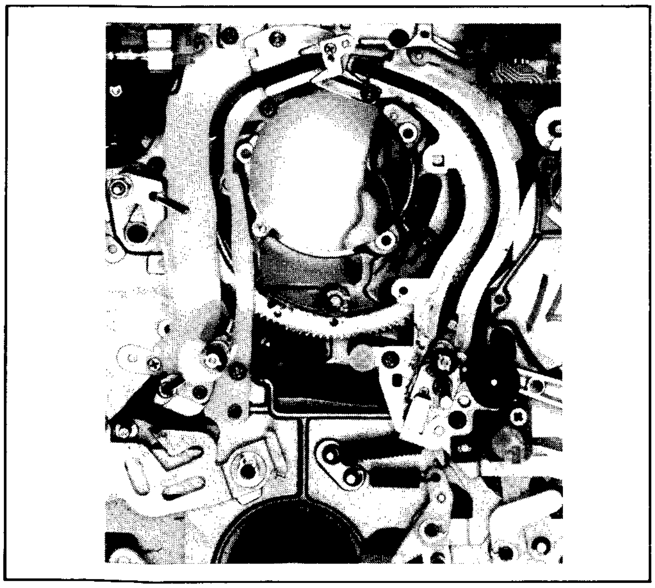


Fig. M30

(4). Install a V Stopper Base and a Supply Post Stopper.

(4) ASSEMBLY PROCEDURES OF MAIN ROD

(1). Place a Main Rod inserting 3 Thrust Washers and then insert 3 washers.
After that, fix them using 2 retaining rings as shown below.

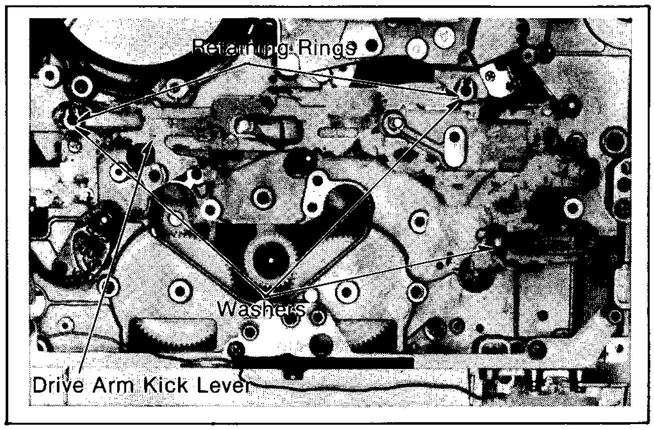


Fig. M31

(2). Install a Drive Arm Kick Lever hooking a Drive Arm kick Lever Spring and fix it using ring.

(5) ASSEMBLY PROCEDURES OF CAM GEAR AND SECTOR GEAR

(1). Make sure that the hole on a Main Rod just should coincide with the hole on chassis as shown below and install a Cam Gear should coincide with he hole between a Cam Gear and the chassis. Then install a retaining ring.

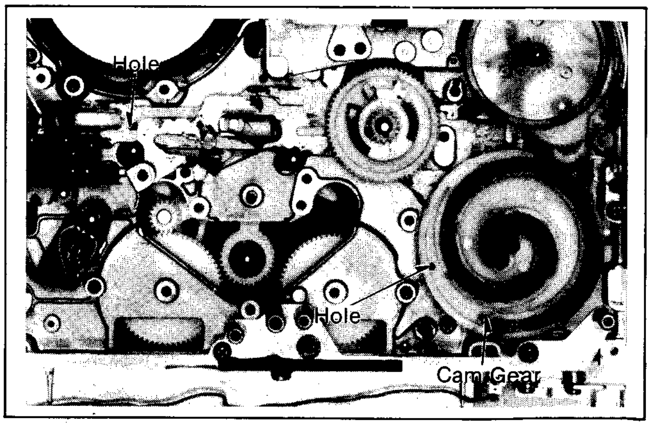


Fig. M32

(2). Install a Loading Gear (C) keeping the relation as shown below.

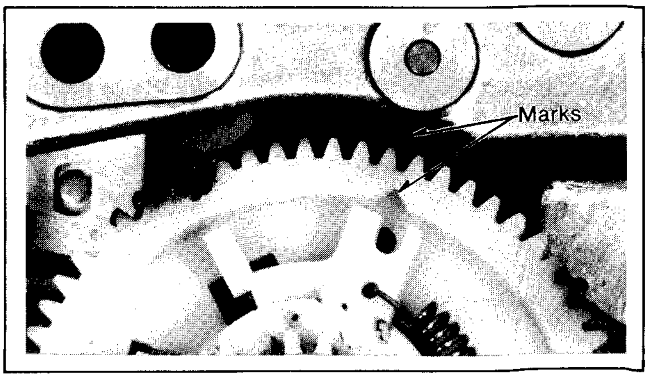
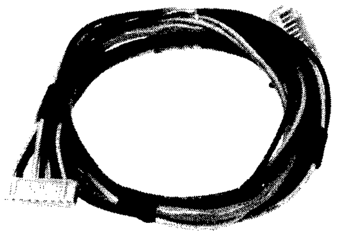


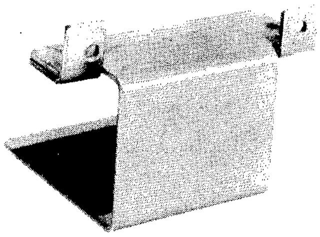
Fig. M33

Servicing Fixtures & Tools

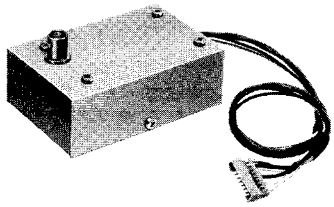
VFK0302 9 Pin Connection Cable



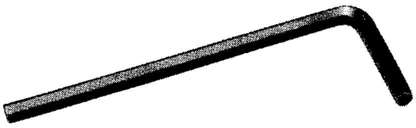
VFK0303 Camera Holder



VFK0304 Y/C Separator

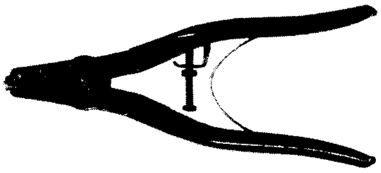


VFK0305 Hex. Wrench (0.71mm)

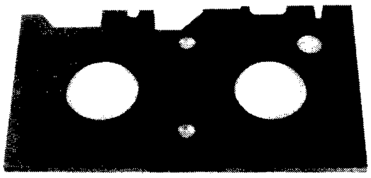


VFJ8125H3F VHS Alignment Tape

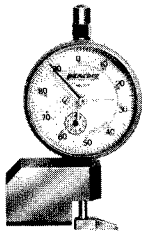
VFK0144 Retaining Ring Remover (3mm)



VFK0191 Post Adjustment Plate



VFK0190 Reel Table Height Jig

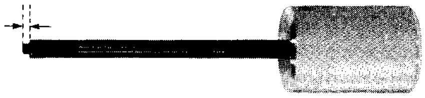


VFK0189 H-Position Adj. Fixture

VFK0137 Post Adjustment Screwdriver

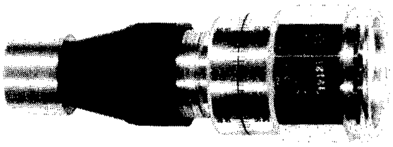
VFK0157 Fine Adjustment Screwdriver

Approx. 1.5mm

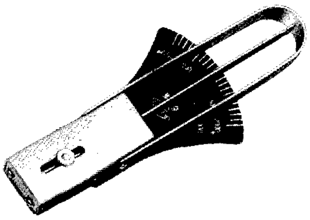


Grind the top portion approximately 2.5mm.

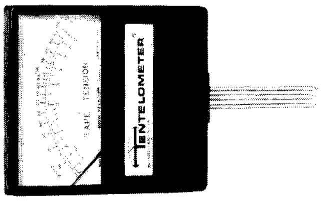
VFK0133 Dial Torque Gauge
VFK0134 Adaptor for VFK0133
VFK0180 (Plastic Clamper Only)



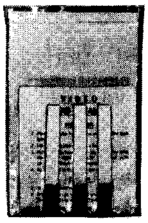
VFK66 Fan Type Tension Gauge



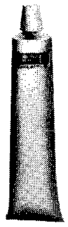
Back Tension Meter (Tentelometer, Made in U.S.A.)



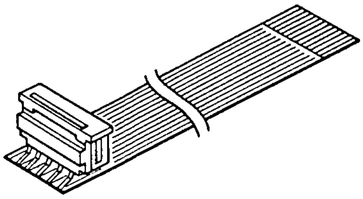
VFK27 Head Cleaing Stick



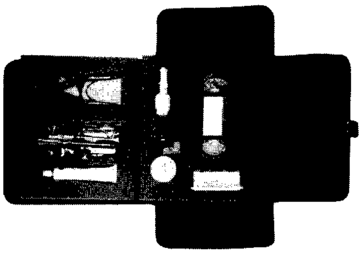
MOR265 Morlytone Grease



VFK0312 10 Pin Connection Cable



VFK0283 Service Alignment Tool Kit



2-4. ELECTRIC ADJUSTMENT PROCEDURES

2-4-1. ELECTRICAL ADJUSTMENT FOR CAMERA SECTION

TEST EQUIPMENT AND TOOL

The following equipment is required for adjustment of the CAMERA section of NV-M3.

TYPE	SPECIFICATION(MAX)
1. Oscelloscope	Dual Trace, 25MHz, 2mV/DIV Delay Sweep 10:1 Probe 1:1 Probe
2. Digital Voltmeter or VTVM	1000V
3. Frequency Counter	
4. Vector Scope	
5. Light Meter	
6. Tripod	
7. Colour Video Monitor	
8. Lighting	140 footcandles (1400lux) on the chart surface, 3200 degrees K.
9. Reflection Chart	Logarithmic gray scale chart (Part No.:YWV2310RB99) Colour Chip Chart (Part No.:YWV2100RB98) Ball Chart (Part No.:YWV2100RB03) White Card
10. Camera Holder	(Part No.: VFK0303) This is used to fix the camera unit on a tripod.
11. 9 pin Connection Cable (Video-Camera)	(Part No.:VFK0302) This is used for connection between the camera unit and the video recorder unit.
12. Plastic Tip Driver	
13. High-Voltage Voltmeter	1500V 1000M ohm (or 1000M ohm Probe)

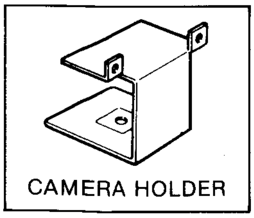

CAMERA HOLDER

Fig.E1

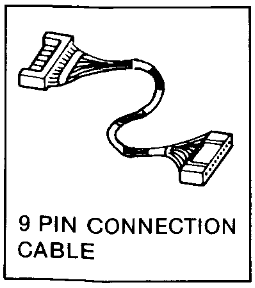

9 PIN CONNECTION CABLE

Fig.E2

PREPARATIONS

1. Remove the camera unit from VTR chassis (Refer to the DISASSEMBLY SECTION)
2. Set the camera unit on the tripod using the camera holder.
   Unscrew 2 screws (A).
   Attach the camera unit to the camera holder (VFK0303), and tighten the screw.
3. Connect the video recorder unit and camera unit through the 9 pin connection cable (VFK0302).

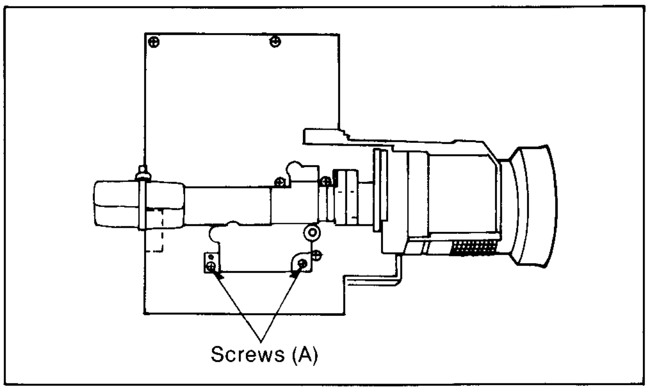


Fig.E3

Now supply the power to the camera unit from the Video recorder unit, and the Video signal from the colour camera is fed to the Video recorder unit.

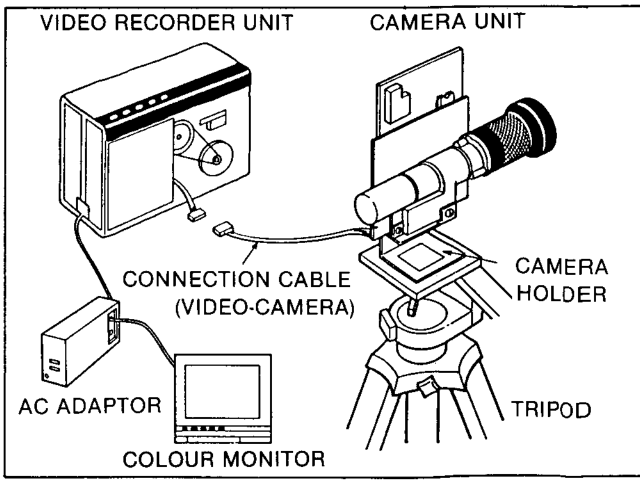

VIDEO RECORDER UNIT
CAMERA UNIT
CONNECTION CABLE (VIDEO-CAMERA)
CAMERA HOLDER
AC ADAPTOR
TRIPOD
COLOUR MONITOR

Fig.E4

Note:
1. Service work for the camera unit must be performed in dust free location to keep the lens dust free.
2. To achieve the best adjustment, warm up the camera for approximately 30 minutes before adjusting.
3. In the deflection circuit, the high voltage (example 1400V) is used.
   Do not touch to this high voltage area. (shown below)

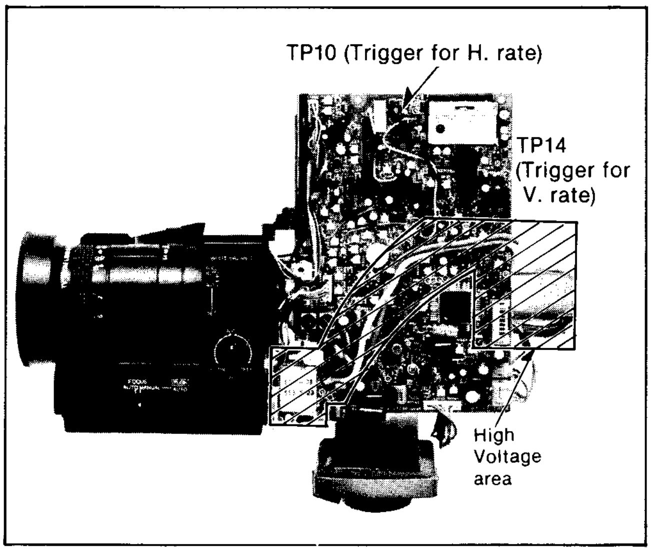

TP10 (Trigger for H. rate)
TP14 (Trigger for V. rate)
High Voltage area

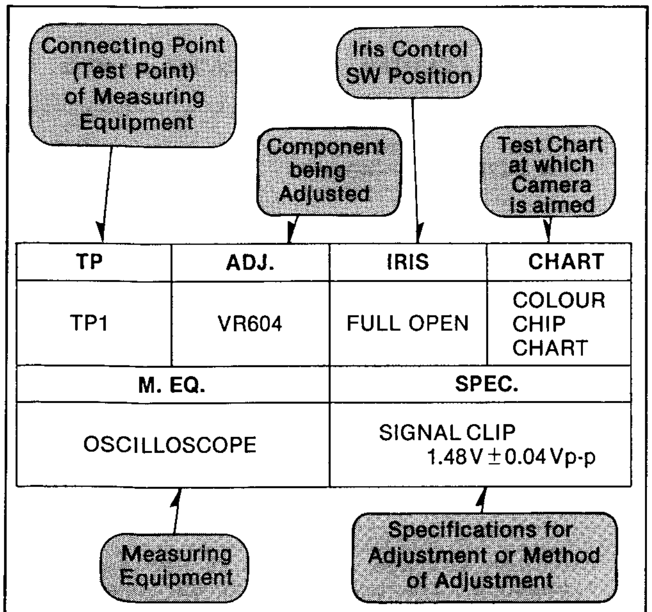
Fig.E5

POSITION OF CONTROLS AND SWITCHES ON THE CAMERA

White Balance Switch---"AUTO" Position
Auto Focus-------------"NORMAL"Position
Iris Control-----------Center (Auto)

CAUTION
Do not set the White Balance during adjustment.

HOW TO READ THE ADJUSTMENT PROCEDURES


Connecting Point (Test Point) of Measuring Equipment
Iris Control SW Position
Component being Adjusted
Test Chart at which Camera is aimed
Measuring Equipment
Specifications for Adjustment or Method of Adjustment

TP	ADJ.	IRIS	CHART
TP1	VR604	FULL OPEN	COLOUR CHIP CHART

M. EQ.	SPEC.
OSCILLOSCOPE	SIGNAL CLIP 1.48V ±0.04Vp-p

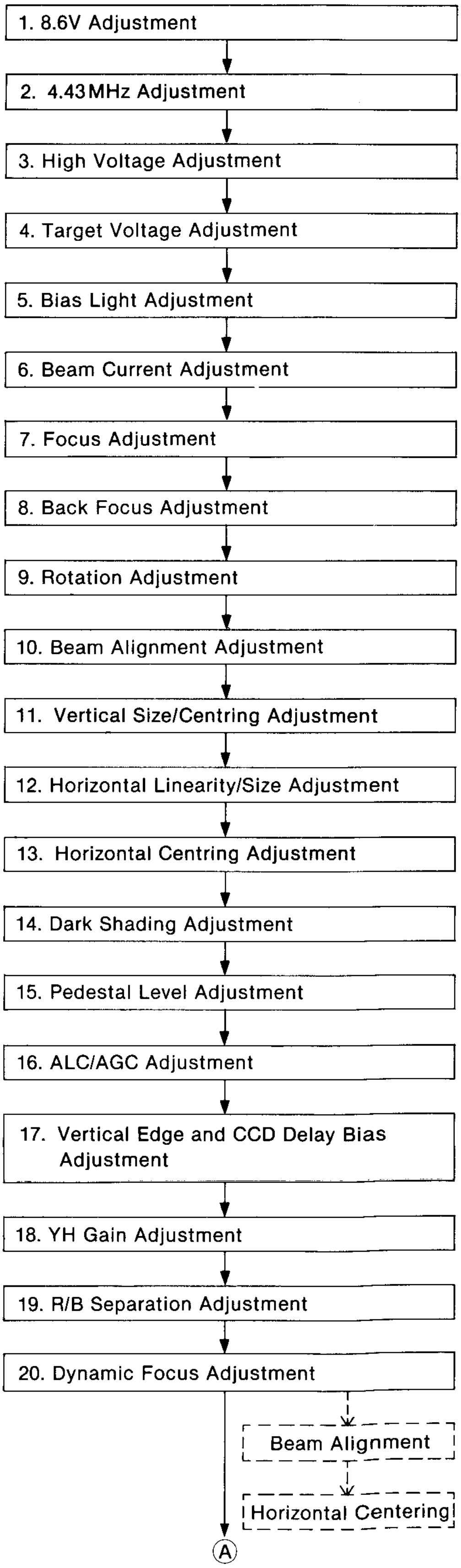
Note: If ☒ appears in any block, this means it is not used or not important.

Fig.E6

FOR TRIGGERING OF THE OSCILLOSCOPE

To trigger the scope, the following test points are supplied.
H rate:
TP10 (CP1 Signal)
V rate:
TP14 (VP Signal)

CAMERA ADJUSTMENT FLOW CHART


1. 8.6V Adjustment
2. 4.43MHz Adjustment
3. High Voltage Adjustment
4. Target Voltage Adjustment
5. Bias Light Adjustment
6. Beam Current Adjustment
7. Focus Adjustment
8. Back Focus Adjustment
9. Rotation Adjustment
10. Beam Alignment Adjustment
11. Vertical Size/Centring Adjustment
12. Horizontal Linearity/Size Adjustment
13. Horizontal Centring Adjustment
14. Dark Shading Adjustment
15. Pedestal Level Adjustment
16. ALC/AGC Adjustment
17. Vertical Edge and CCD Delay Bias Adjustment
18. YH Gain Adjustment
19. R/B Separation Adjustment
20. Dynamic Focus Adjustment
Beam Alignment
Horizontal Centering
Ⓐ

Ⓐ

21. Colour Shading Adjustment
22. R-Y, B-Y Signal Pedestal Preset Adjustment
23. R/B Gain and YL Pedestal Adjustment
24. R Gain Adjustment
25. R/B Gamma Adjustment
26. Vertical Edge Adjustment
27. Colour Phase and Gain Adjustment
28. High Intensity Suppress Adjustment
29. AWC Off Set Adjustment
30. AWT Sensor Output Adjustment
31. AWT Sensor Low Illumination Cut Adjustment
32. AWT White Balance Adjustment
33. AWT White Tracking Adjustment

AUTO FOCUS ADJUSTMENT FLOW CHART

1. AF LED Position Adjustment
2. AF LED Current Adjustment
3. Off Set Adjustment
4. Encoder Position Adjustment
5. AF Receiver (1) Adjustment
6. AF Receiver (2) Adjustment
7. D/A Converter Adjustment

EVF ADJUSTMENT FLOW CHART

1. Horizontal Hold Adjustment
2. Picture Tilt Adjustment
3. EVF V-Size and H-Size Adjustment
4. Contrast and Brightness Adjustment
5. Focus Adjustment

CAMERA ADJUSTMENT PROCEDURES

1. 8.6V ADJUSTMENT

TP	ADJ.	IRIS	CHART
TP15	VR601		
M. EQ.		**SPEC.**	
D.V.M.		8.6V±50mV	

Note:
This adjustment should always be performed before any other items because this voltage will affect overall camera circuit.

2. 4.43MHz ADJUSTMENT

TP	ADJ.	IRIS	CHART
TP8	C442		
M. EQ.		**SPEC.**	
FREQUENCY COUNTER		4.433618MHz±40Hz	

1. Turn the C442 so that frequency become 4.433618MHz+-40Hz

3. HIGH VOLTAGE ADJUSTMENT

TP	ADJ.	IRIS	CHART
G6 TERMINAL	VR609		
M. EQ.		**SPEC.**	
HIGH-VOLTAGE VOLTMETER		1400V±30V	

A high voltage volmeter is necessary to measure the potential of G6 terminal of pick-up tube. Do not use low impedance meter. (or low impedance probe)

(HIGH VOLTAGE VOLTMETER)
Range: More than 2000V
Impedance: 1000 M ohms (or 1000M ohms probe for high voltage)

Do not perform this adjustment (VR609) without above equipment.

4. TARGET VOLTAGE ADJUSTMENT

TP	ADJ.	IRIS	CHART
TP12	VR611		
M. EQ.		**SPEC.**	
D.V.M.		Esj. +2V±0.5V	

(1).Connect the digital voltmeter to TP12.
(2).Adjust the target voltage control (VR611) so that the voltage is equal to the Esj value stamped on the Newvicon tube plus 2V+-0.5V.
Esj value is also written on seal of coil as shown in Fig E7(B).

Note:
If pick-up tube have replaced before, Esj value which is stamped on pick-up tube is defferent from seal of coil's one.
When you replace the pick-up tube, please correct the Esj value which is written on seal of coil so that written on seal of coil's Esj match the stamped on pick-up tube's one.

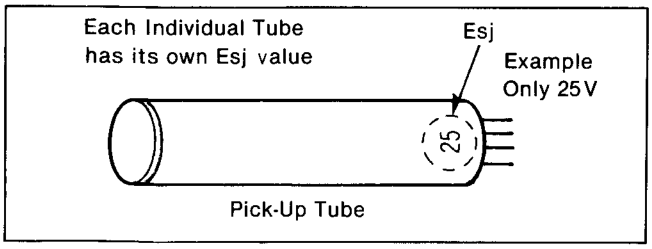

Each Individual Tube
has its own Esj value
Esj
Example
Only 25V
25
Pick-Up Tube

Fig.E7(A)

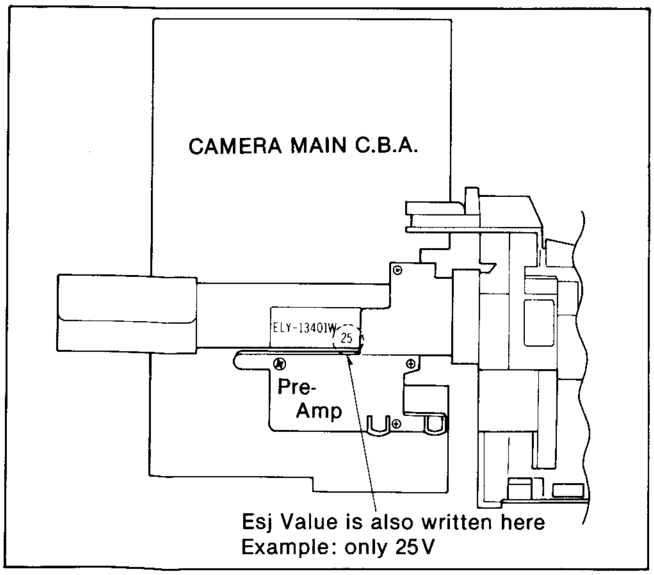

CAMERA MAIN C.B.A.
ELY-13401W
25
Pre-
Amp
Esj Value is also written here
Example: only 25V

Fig.E7(B)

5. BIAS LIGHT ADJUSTMENT

TP	ADJ.	IRIS	CHART
TP1	VR612	CLOSED	
M. EQ.		**SPEC.**	
OSCILLOSCOPE		24mV±8mV	

(1).Turn the iris control fully counter clockwise (CLOSE position).
(2).Connect the scope to TP1 (V.rate).
(3).Adjust the bias light control (VR612) so that the waveform level is 24mV+-8mV.

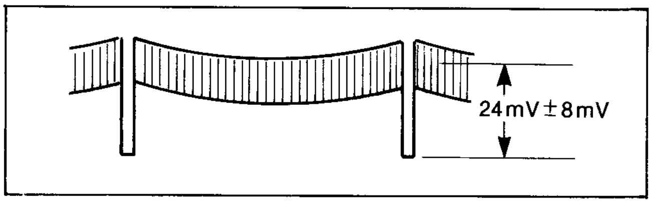


Fig.E8

Note:
1. If there is dark shading (bias light shading), adjust the level at the centre of the waveform.
2. Use 1:1 probe for easier adjustment.

6. BEAM CURRENT ADJUSTMENT

TP	ADJ.	IRIS	CHART
TP1	VR604	FULLY OPEN	WHITE CARD
M. EQ.		**SPEC.**	
OSCILLOSCOPE		SIGNAL CLIP 1.48V±0.04Vp-p	

(1).Connect the scope to TP1 (H rate).
(2).Aim the camera at the small light source (for example: studio lights) in order to saturate the beam, and focus at the TELE side
(3).Turn the iris control fully clockwise (OPEN position).
(4).Adjust the beam control (VR604) so that the signal clippimg occurs at 1.48V +- 0.04Vp-p.

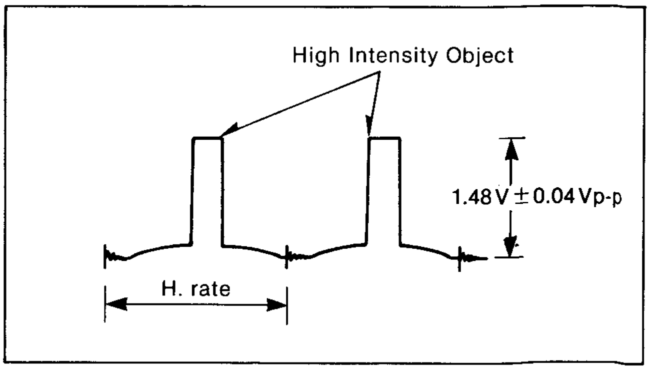

High Intensity Object
1.48V±0.04Vp-p
H. rate

Fig.E9

Note:
1. If the signal is less than 1.48Vp-p, use a more intense light source.
2. Be careful not to damage the pick-up tube with too strong light.

7. FOCUS ADJUSTMENT

TP	ADJ.	IRIS	CHART
TP4	VR610	NORMAL	WHITE CARD
M. EQ.		**SPEC.**	
OSCILLOSCOPE		MAXIMUM SIGNAL LEVEL	

(1).Aim the camera at the white chart.
(2).Connect the scope to TP4 (H. rate).
(3).Adjust the focus control (VR610) so that the carrier (3.9MHz) on the centre portion of the pre-video signal becomes maximum as shown below.
(4).Make sure that the green colour is also minimized at on the centre portion of monitor screen.

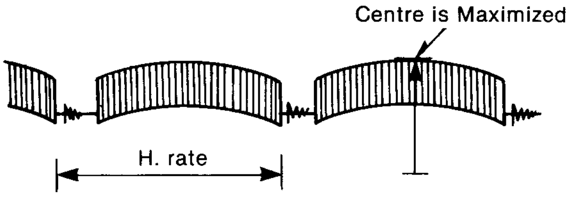


Fig.E10

8. BACK FOCUS ADJUSTMENT

TP	ADJ.	IRIS	CHART
	LENS FOCUS	AUTO	OBJECT
M. EQ.		**SPEC.**	
TV MONITOR		FOCUS TRACKS THROUGHOUT THE ZOOM RANGE.	

(1).Aim the camera at the object further than 33 feet (10m) from the camera.
(2).Zoom all the way in (Close up/telephoto) and adjust the focus by turning the lens focus.
(3).Zoom all the way out (Wide angle) and adjust the focus by turning the backfocus adjustment ring.
(4).Zoom in again and adjust the focus by turning the lens focus.
(5).Zoom out again and adjust the focus by turning the backfocus adjustment ring.
(6).Repeat this procedure zoom in, focus, zoom out and adjust until the best focus is obtained over the entire zoom range.

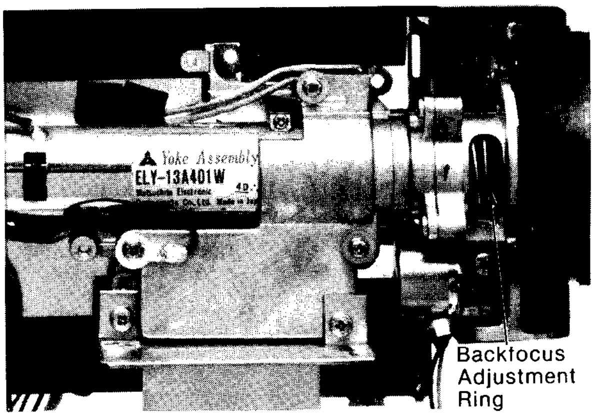


Fig.E11

9. ROTATION ADJUSTMENT

TP	ADJ.	IRIS	CHART
TP1	TUBE	NORMAL	WHITE CARD
M. EQ.		**SPEC.**	
OSCILLOSCOPE		MINIMUM BEAT	

(1).Remove the shield cover for pick-up tube.
(2).Loosen the pick-up tube holding screw.
(3).Aim the camera at the white card.
(4).Connect the scope to TP 1 (V. rate)
(5).Adjust the focus control (VR610) formaximum signal level.
(6).Delay the sweep of the centre portion of the vertical signal waveform and observe a few horizontal lines.
(7).Rotate the pick-up tube by means of the tube socket (CAUTION 1.4KV) so that the beat during the horizontal period is minimum.

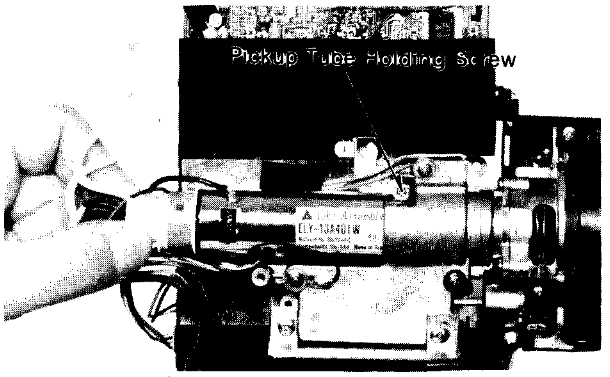


Fig.E12

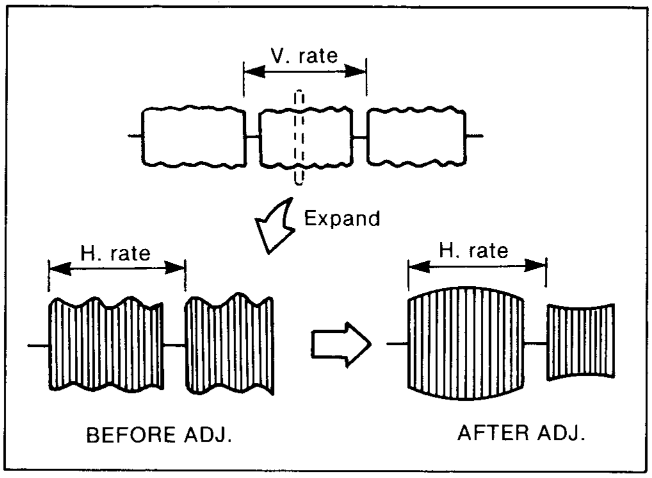


Fig.E13

(8).Carefully tighten the pick-up tube holding screw.

10. BEAM ALIGNMENT ADJUSTMENT

TP	ADJ.	IRIS	CHART
	ALIGNMENT MAGNET	NORMAL	WHITE CARD

M. EQ.	SPEC.
TV MONITOR	MAXIMUM RED

(1).Aim the camera at the white card.
(2).Set the red gain control (VR309) so that a red or magenta colour appears on the monitor screen.
(3).Remove the lock paint from the alignment magnets.
(4).Then observe the colour monitor, and rotate the alignment magnets for minimum green tint in the centre and maximum magenta (red) colour covers the whole screen of the monitor .
(5).Lock the alignment magnets using the lock paint.
(6).Adjust the red gain control (VR309) after this adjustment.

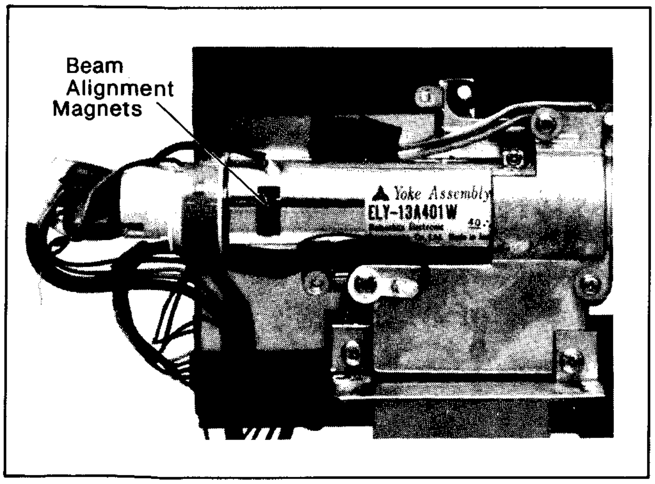


Fig.E14

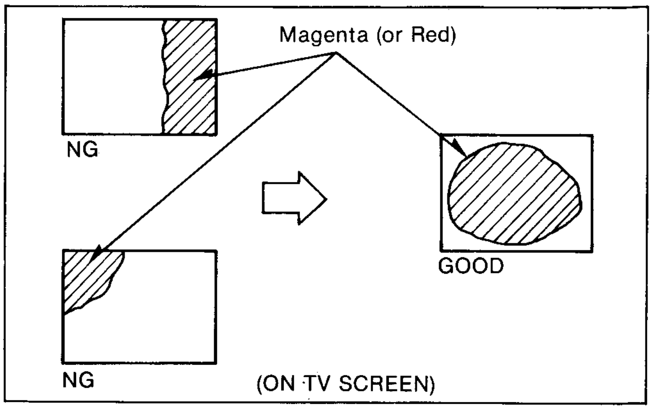


Fig.E15

Note:

Complete elimination of green corners or edges might not be achieved at this point, because dynamic focus and shading compensation remain to be set. It might be necessary to trim up the beam alignment adjustment after the dynamic focus and color shading adjustments have been completed.

11. VERTICAL SIZE/CENTRING ADJUSTMENT

TP	ADJ.	IRIS	CHART
TP1	VR603	NORMAL	WHITE CARD
	VR602		SMALL OBJECT

M. EQ.	SPEC.
OSCILLOSCOPE	ONE BEAT PER ENVELOPE
TV MONITOR	OBJECT DOES NOT MOVE VERTICALY

(1).Aim the camera at the white card.
(2).Connect the scope to TP1 (V rate).
(3).Adjust the vertical size control (VR603) so that the beat in the signal is minimized.
After adjustment, there should be a maximum of one cycle per envelope.
(4).Aim the camera at a small object so that the object is in the centre of the monitor screen.
(5).Adjust the vertical centreing control (VR602) so that the small object does not shift vertically when the lens is zoomed in and out a few times.

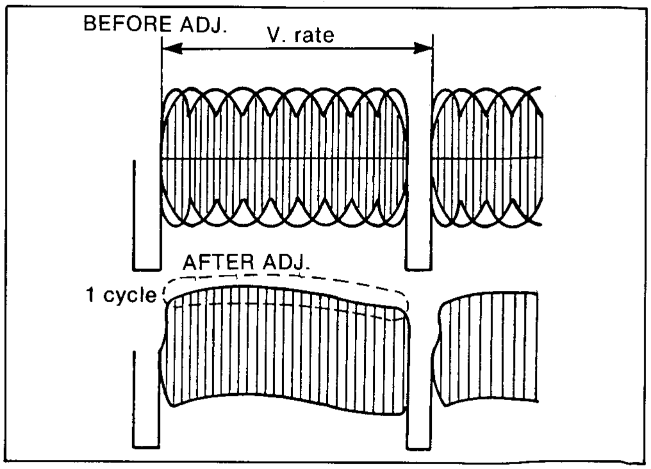


Fig.E16

12. HORIZONTAL LINEARITY/SIZE ADJUSTMENT

TP	ADJ.	IRIS	CHART
TP6	VR605 VR607 VR608	NORMAL	WHITE CARD
M. EQ.		**SPEC.**	
OSCILLOSCOPE		LEVEL IS MINIMIZED. WAVEFORM IS FLAT.	

(1).Aim the camera at the white card.
(2).Connect the oscilloscope to TP1 (H rate).
(3).Adjust the horizontal size control (VR605) so that the carrier (3.9MHz) at the centre of the waveform portion is minimized.
(4).Adjust the horizontal linearity 1 (VR607) and 2 (VR608) so that the waveform is flat.

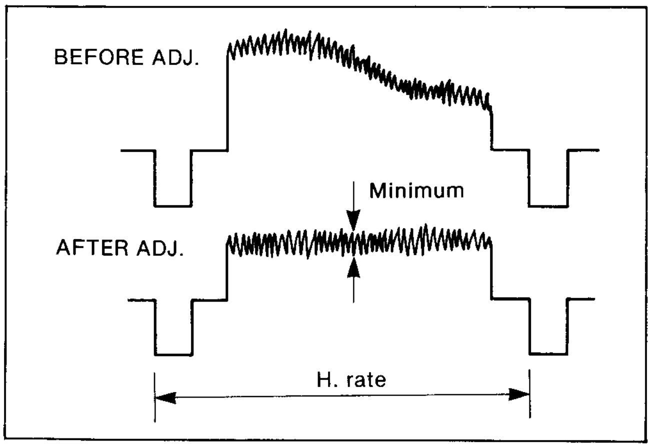


Fig.E17

13. HORIZONTAL CENTRING ADJUSTMENT

TP	ADJ.	IRIS	CHART
TP1 TP10	VR606	NORMAL	WHITE CARD
M. EQ.		**SPEC.**	
OSCILLOSCOPE		1.7µsec.~2.0µsec.	

(1).Aim the camera at the white card.
(2).Connect the CH1 of the scope to TP1 and CH2 to TP10 (CP1 signal).
(3).Use the CP1 signal for scope trigger and observe the horizontal blanking interval of the signal using the delay mode of the scope.
(4).Adjust the horizontal centreing control (VR606), so that the time between the trailing edge of the video signal and the raising edge of the clump pulse 1 signal is 1.7 usec~2.0 usec.

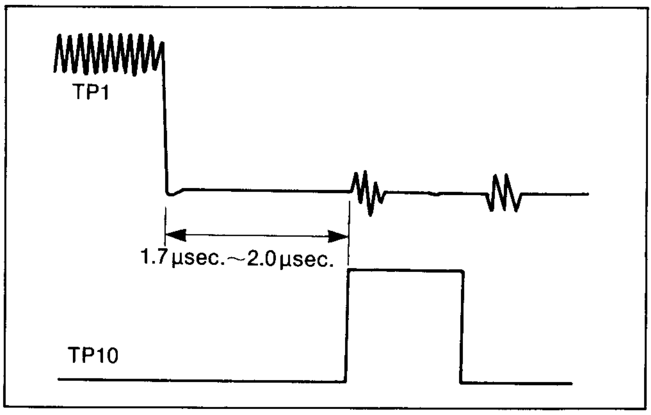


Fig.E18

Note:
1. If the double trace occurs at the end of a horizontal line, reconfirm the pick-up turning adjustment (Item 9).
2. If the rotation adjustment is correct, adjust VR606 Item13-(4).

14. DARK SHADING ADJUSTMENT

TP	ADJ.	IRIS	CHART
TP2	VR411 (H) VR412 (H) VR202 (V) VR203 (V)	CLOSED	☒
M. EQ.		**SPEC.**	
OSCILLOSCOPE		WAVEFORM IS FLAT.	

(1).Turn the iris control fully counter clockwise. (Close Position)
(2).Connect the oscilloscope to TP2 (H.rate)
(3).Adjust the dark shading controls (VR411 and VR412) so that the waveform is flat.

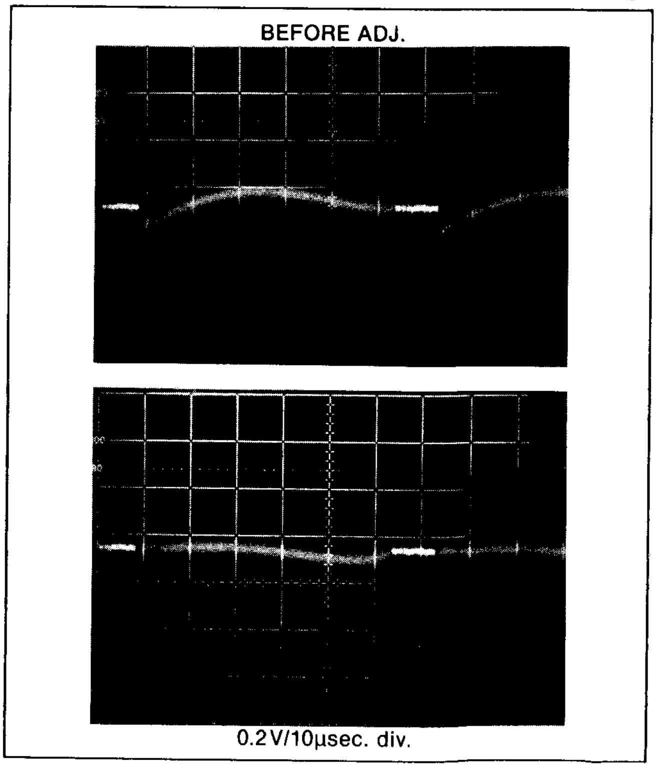


Fig.E19

(4).Trigger the scope at V. rate.
(5).Adjust the dark shading controls (VR202 and VR203) so that the waveform is flat.

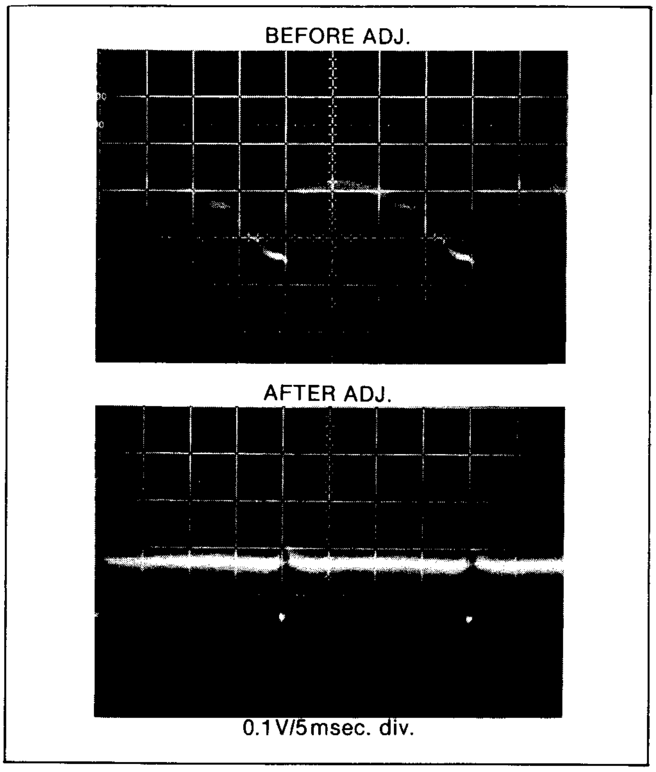


Fig.E20

15. PEDESTAL LEVEL ADJUSTMENT

TP	ADJ.	IRIS	CHART
TP6	VR201	CLOSED	

M. EQ.	SPEC.
OSCILLOSCOPE	19mV~20mV

(1).Turn the iris control fully counter clockwise (CLOSE Position)
(2).Connect the scope to TP6 (H. rate).
(3).Adjust the dark control (VR201) so that signal level is 19mV~20mV from BLK level to centre of peak portion.

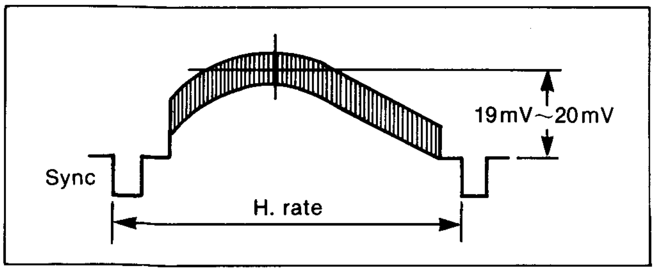


Fig.E21

(4).Confirm that the pedestal level does not change by turning the iris control.

16. ALC/AGC ADJUSTMENT

TP	ADJ.	IRIS	CHART
TP1	VR204	NORMAL	GRAY SCALE
TP2	VR205		

M. EQ.	SPEC.
OSCILLOSCOPE	0.5V±0.02Vp-p
	0.5V±0.02Vp-p

(1).Aim the camera at the logarithmic gray scale chart and set iris control to "Auto".
(2).Connect the scope to TP1 (H. rate).
(3).Then to release the carrier signal. (by turning the focus control VR610).
(4).Adjust the ALC control (VR204) so that the signal level is 0.5V+-0.02Vp-p.

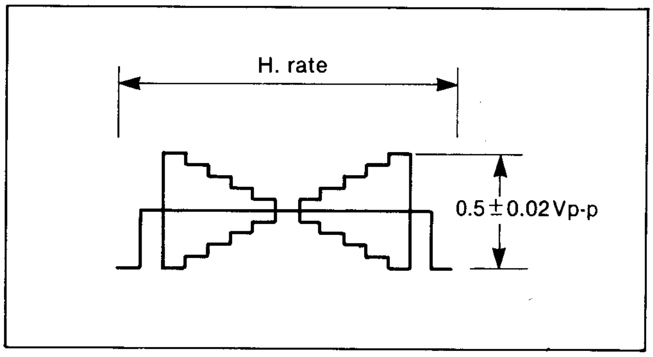


Fig.E22

(5).Connect the scope to TP2 (H. rate).
(6).Adjust the AGC control (VR205) so that the signal level is 0.5V +- 0.02Vp-p.
(7).After adjustment, readjust the focus control, VR610 (Item 7).

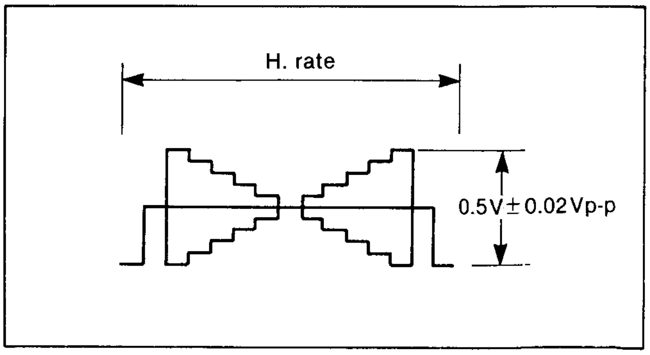


Fig.E23

Note:
This adjustment mest be performed in the condition of 1400lux illumination.

17. VERTICAL EDGE AND CCD DELAY BIAS ADJUSTMENT

TP	ADJ.	IRIS	CHART
TP3	VR405 VR406	NORMAL	GRAY SCALE

M. EQ.	SPEC.
OSCILLOSCOPE	CANCEL THE VIDEO SIGNAL.

(1).Aim the camera at the logarithmic gray scale chart.
(2).Connect the scope to TP3 (H. rate).
(3).Adjust the vertical edge balance control (VR405) and the CCD bias control (VR406) to cancel the video signal.

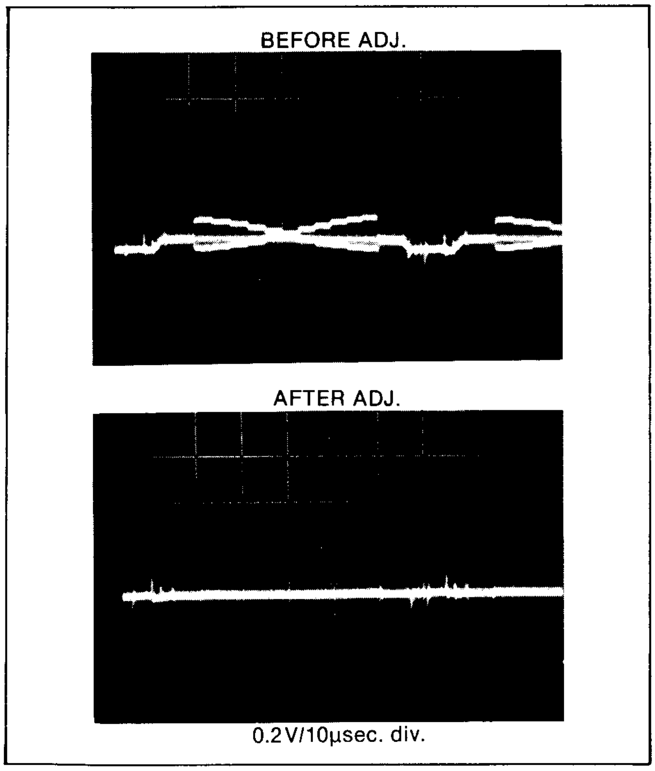


Fig.E24

18. YH GAIN ADJUSTMENT

TP	ADJ.	IRIS	CHART
TP6	VR304	NORMAL	GRAY SCALE

M. EQ.	SPEC.
OSCILLOSCOPE	1.75V±0.05Vp-p

(1).Aim the comera at the logarithmic gray scale chart.
(2).Connect the scope to TP6 (H. rate).
(3).Adjust the YH gain control (VR304) so that the signal level is 1.75V+-0.05Vp-p

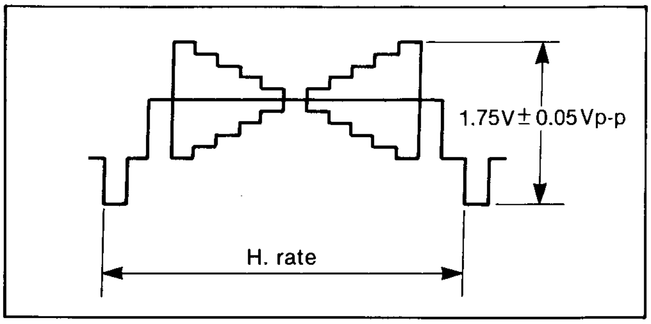


Fig.E25

19. R/B SEPARATION ADJUSTMENT

TP	ADJ.	IRIS	CHART
TP25	VR303 C305	NORMAL	GRAY SCALE

M. EQ.	SPEC.
OSCILLOSCOPE	MINIMUM FLICKER

(1).Aim the camera at the logarithmic gray scale.
(2).Connect the scope to TP25 (H. rate).
(3).Alternately adjust the separation controls (VR303 and C305) at minimize the flicker.

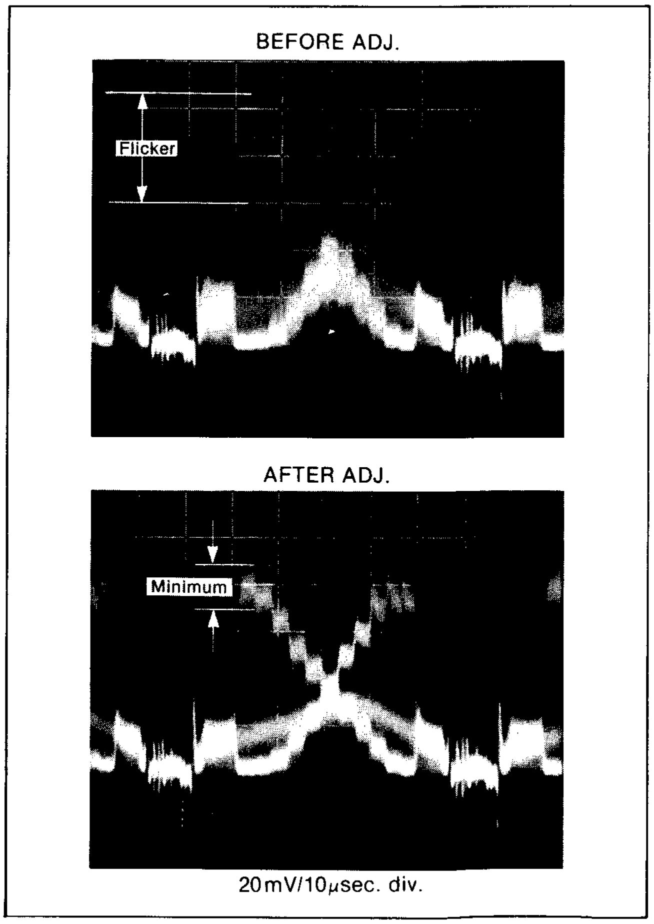


Fig.E26

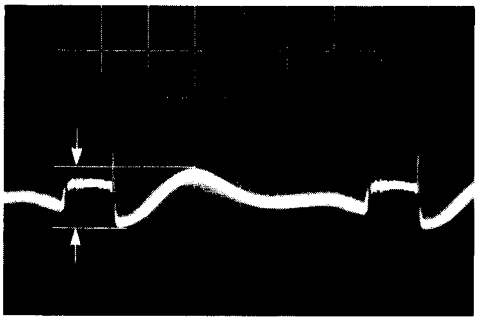
20. DYNAMIC FOCUS ADJUSTMENT

TP	ADJ.	IRIS	CHART
TP4	VR409 (H) VR410 (H) VR408 (V) VR407 (V)	NORMAL	WHITE CARD

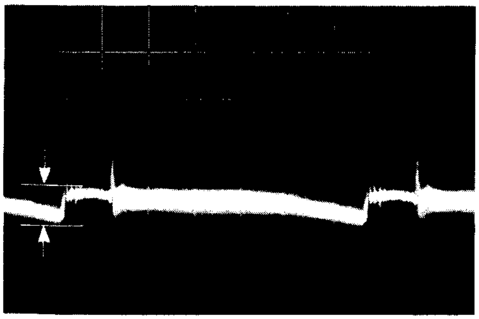
M. EQ.	SPEC.
OSCILLOSCOPE	FLAT WAVEFORM

(1).Aim the camera at the white chart.
(2).Connect the scope to TP4. (H.rate)
(3).Adjust the dynamic focus controls VR409 and VR410 so that the waveform is flat as possible.

BEFORE ADJ.



AFTER ADJ.



0.1V/10µsec. div.

Fig.E27

(4).Change the scope trigger to V. rate.
(5).Adjust the dynamic focus controls for V (VR408 and VR407) so that the waveform is flat as possible.
(6).Return the scope trigger to H. rate.
(7).Readjust VR409 and VR410 so that the waveform is kept be flat when the focus control (VR610) is turned.
(8).Change the scope trigger to V. rate again.
(9).Readjust VR408 and VR407 by same method with H. rate.
(10).Readjust the focus control (VR610). Refer to item 7.

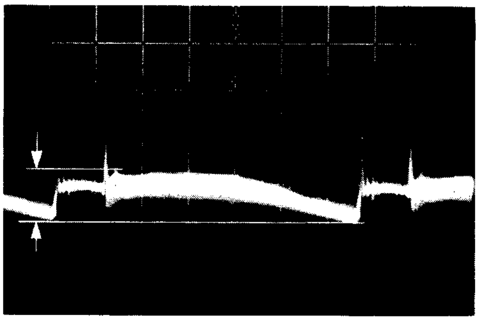
21. COLOUR SHADING ADJUSTMENT

TP	ADJ.	IRIS	CHART
TP4 TP5	VR310~313 VR317~320	NORMAL	WHITE CARD

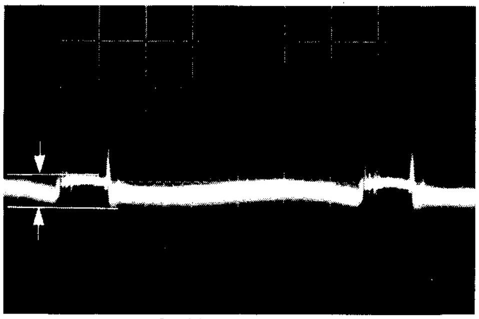
M. EQ.	SPEC.
OSCILLOSCOPE	FLAT WAVEFORM

(1).Aim the camera at the white chart.
(2).Connect the scope to TP4 and observe the R-Y signal at H. rate
(3).Adjust the colour shading controls for H.(VR312 and VR313) so that the waveform is flat as possible.

BEFORE ADJ.



AFTER ADJ.

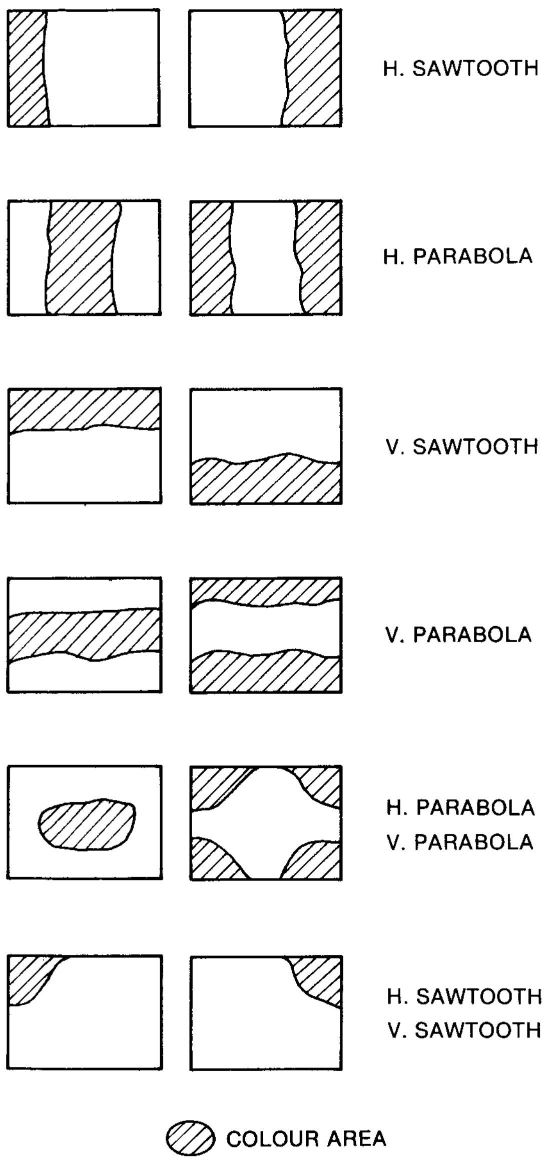


0.1V/10µsec. div.

Fig.E28

(4).Trigger the scope at V. rate.
(5).Adjust the colour shading controls for V (VR310 and VR311) so that the waveform is flat as possible.
(6).Change the scope to TP5 to observe the B-Y signal.
(7).Alternately adjust the colour shading controls (VR319 and VR320 in the H.rate, VR317 and VR318 in the V.rate) so that waveform is flat as possible.

Note 1:
To adjust easily, observe the colour monitor and if shading occurs as shown below, adjust following controls.


H. SAWTOOTH
H. PARABOLA
V. SAWTOOTH
V. PARABOLA
H. PARABOLA
V. PARABOLA
H. SAWTOOTH
V. SAWTOOTH
COLOUR AREA

		PARABOLA	SAWTOOTH
R-Y	H	VR312	VR313
	V	VR310	VR311
B-Y	H	VR319	VR320
	V	VR317	VR318

Fig.E29

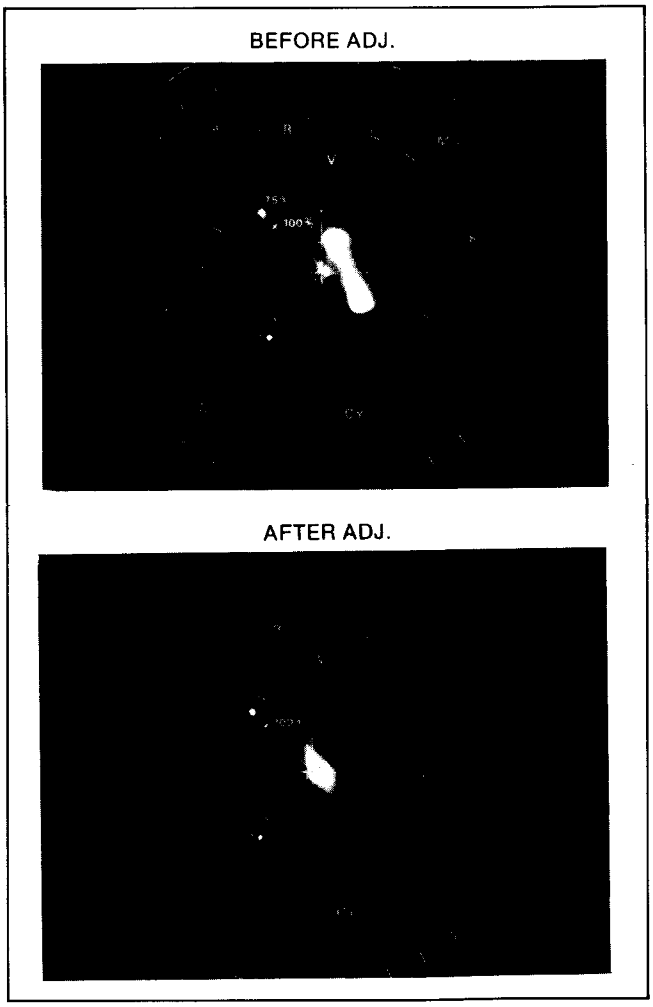
22. R-Y, B-Y SIGNAL PEDESTAL PRESET ADJUSTMENT

A. WITH VECTOR SCOPE

TP	ADJ.	IRIS	CHART
VIDEO OUTPUT	VR322 VR323	CLOSED	
M. EQ.		**SPEC.**	
VECTOR SCOPE		VECTORS ARE CENTRE ON VECTORSCOPE DISPLAY	

(1).Turn the iris control fully counter clockwise. (CLOSE side)
(2).Supply the video signal taken from the VCR section to the vector scope.
(3).Adjust the pedestal controls (VR322 and VR323) so that the colour vectors centre on the vector scope.

Note:
The vector scope has to be terminated, by 75 ohm during adjustment.


BEFORE ADJ.

AFTER ADJ.

Fig.E30

B. WITH OSCILLOSCOPE

TP	ADJ.	IRIS	CHART
TP9	VR322 VR323	CLOSED	
M. EQ.		**SPEC.**	
OSCILLOSCOPE		MINIMUM WAVEFORM	

(1).Turn the iris control fully counter clockwise. (CLOSE Position)
(2).Connect the CH1 of the scope to TP9 (H.rate).
(3).Adjust the pedestal controls (VR322 and VR323) so that the waveform is minimized.

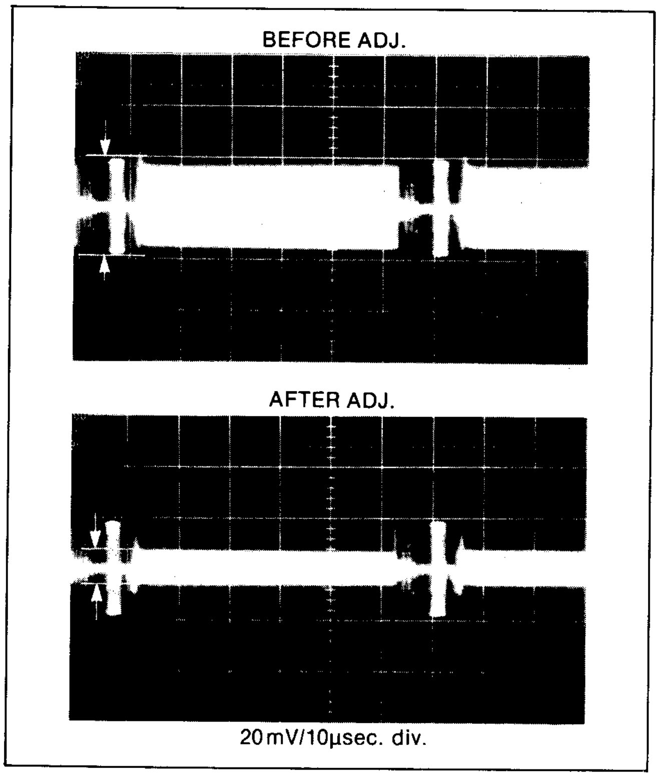


Fig.E31

23. R/B GAIN AND YL PEDESTAL ADJUSTMENT

A. WITH VECTOR SCOPE

TP	ADJ.	IRIS	CHART
VIDEO OUT	VR302 VR321	NORMAL	GRAY SCALE

M. EQ.	SPEC.
VECTOR SCOPE	VECTOR ARE CENTRE ON VECTORSCOPE DISPLAY

(1).Aim the camera at a logarithmic gray scale chart.
(2).Supply the video output to the vector scope.
(3).Adjust the R/B gain control (VR302) and the YL pedestal control (VR321) so that the vectors centre on the vector scope as possible.

B. WITH OSCILLOSCOPE

TP	ADJ.	IRIS	CHART
TP5	VR302	NORMAL	GRAY SCALE
TP4	VR321		

M. EQ.	SPEC.
OSCILLOSCOPE	MINIMUM WAVEFORM (REFER TO FIG. E32)

(1).Aim the camera at a logarithmic gray scale chart.
(2).Connect the CH1 of the scope to TP4.
(3).Adjust the YL pedestal control (VR321) so that the waveform is as shown below.
(4).Connect the CH1 of the scope to TP5.
(5).Adjust the R/B gain control(VR302) so that the waveform is same as item 3.

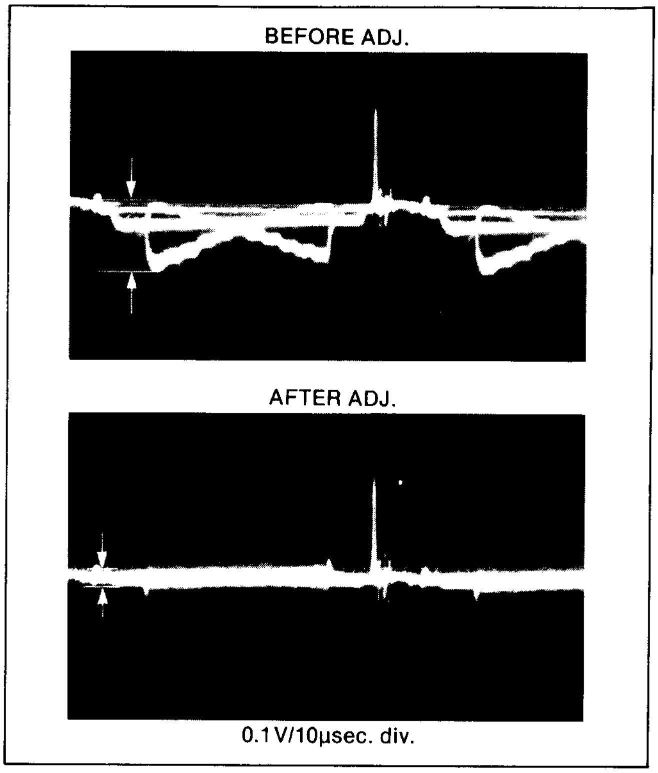


Fig.E32

24. R GAIN ADJUSTMENT

TP	ADJ.	IRIS	CHART
TP4	VR309	NORMAL	GRAY SCALE

M. EQ.	SPEC.
OSCILLOSCOPE	CENTRE OF WAVEFORM IS BLK LEVEL.

(1).Aim the camera at at the logarithmic gray scale chart.
(2).Connect the scope to TP4 (H. rate).
(3).Adjust the R gain control (VR309) so that the step wave at the centre area of waveform (4th~6th step) is BLK level as shown below.

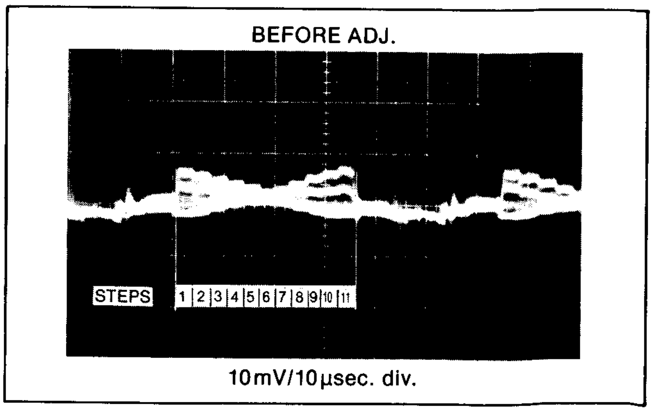


Fig.E33(A)

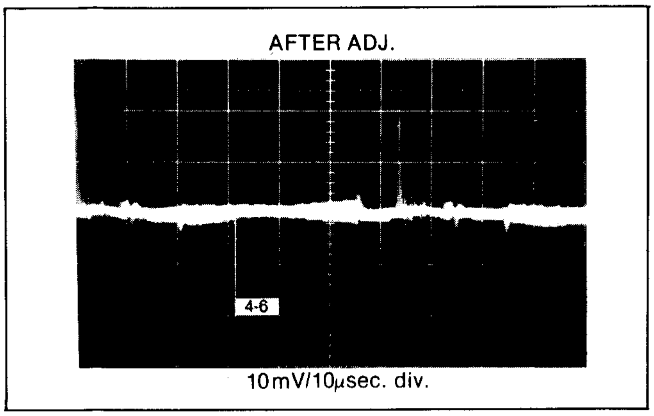


Fig.E33(B)

25. R/B GAMMA ADJUSTMENT

TP	ADJ.	IRIS	CHART
TP4 TP5	VR306~308 VR314~316	NORMAL	GRAY SCALE
M. EQ.		**SPEC.**	
OSCILLOSCOPE		WAVEFORM IS MINIMIZED.	

(1).Aim the camera at a logarithmic gray scale chart.
(2).Connect the scope to TP4 (H. rate).
(3).Adjust the R gamma 1 (VR307) so that the 1st~4th step is flat as shown below.
(4).Adjust the R gamma 2 (VR308) so that the 7th~8th step is flat.

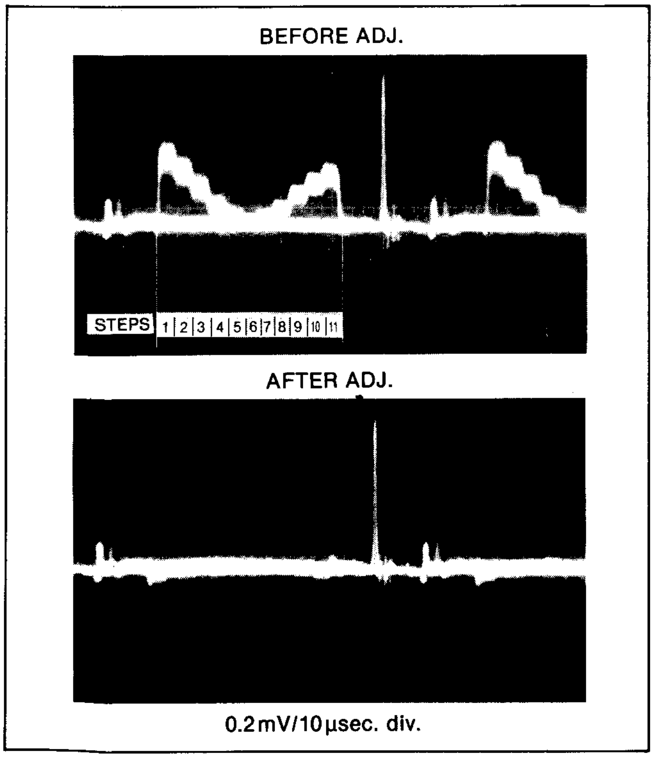


Fig.E34

(5).Adjust the R gamma 3 (VR306) so that the 9th-11th step is flat.
(6).Connect the scope to TP5.
(7).Adjust B gamma controls (VR314~VR316) by same method with the R gamma adjustment.

VR315 1st~4th step
VR314 7th~8th step
VR316 9th~11th step

Note:
After adjustment of these controls, readjust the R/B gain (VR302) and YL pedestal control (VR321) again.
Refer to the item 23.

26. VERTICAL EDGE ADJUSTMENT

TP	ADJ.	IRIS	CHART
VIDEO OUTPUT	VR301	NORMAL	GRAY SCALE
M. EQ.		**SPEC.**	
TV MONITOR		COLOUR ERROR IS ELIMINATED.	

(1).Aim the camera at the logarithmic gray scale chart.
(2).Observe the picture on the colour monitor and adjust the vertical edge gain control (VR301) until the colour fringing on the upper and lower edge of the logarithmic gray scale is eliminated.

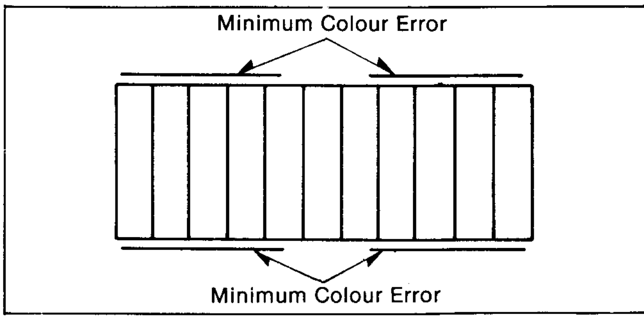


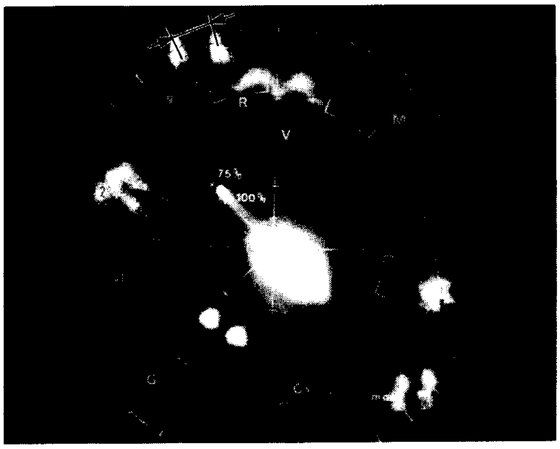
Fig.E35

27. COLOUR PHASE AND GAIN ADJUSTMENT

TP	ADJ.	IRIS	CHART
VIDEO OUTPUT	VR414 VR413 VR415 VR403	NORMAL	COLOUR CHART
M. EQ.		**SPEC.**	
VECTOR SCOPE		REFER TO FIG. E36 (A)(B)	

(1).Aim the camera at the colour chart.
(2).Supply the video signal to the vector scope.
(3).Set the vector scope to NTSC mode.
(4).Adjust the burst phase control (VR415) so that the two red vectors becomes one as shown in Fig.E36(A).
(5).Adjust the colour phase controls (VR413, VR414 and VR403) so that the vector of each colour is shown in Fig.E36(B).

BEFORE ADJ.



AFTER ADJ.

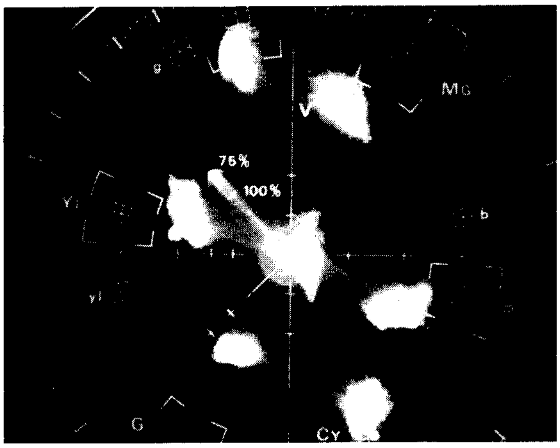
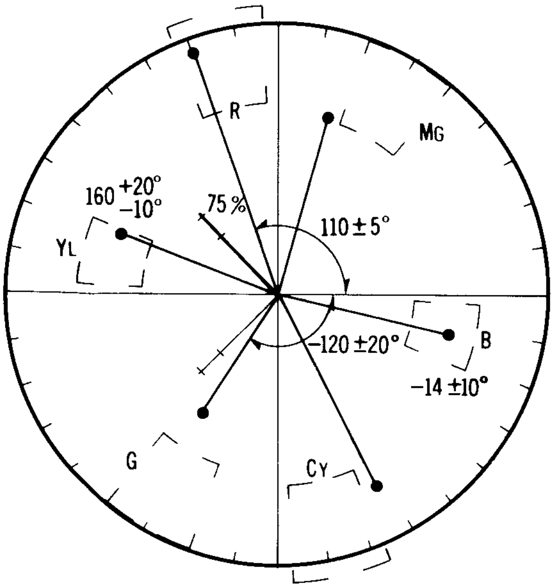


Fig.E36(A)

(6).Adjust the colour gain control (VR401) so that the red vector is 190% comparing with the burst signal on the vector scope.



R: 110 ±5°   G: 120 ±20°

B: -14 ±10°   Ye: $160^{+10^\circ}_{-20^\circ}$

Fig. E36(B)

28. HIGH INTENSITY SUPPRESS ADJUSTMENT

TP	ADJ.	IRIS	CHART
VIDEO OUTPUT	VR404	800mV~1V AT TP1	GRAY SCALE
M. EQ.		SPEC.	
OSCILLOSCOPE		GREEN IS ELIMINATED	

(1).Aim the camera at a logarithmic gray scale chart.
(2).Connect the scope to TP1 (V.rate).
(3).Adjust the iris control so that the waveform level is 800mV~1V.
(4).Observe the picture on the monitor and adjust the high intensity suppress control (VR404) so that the green coloured portion is eliminated.

29. AWC OFF SET ADJUSTMENT

A. WITH VECTOR SCOPE

TP	ADJ.	IRIS	CHART
VIDEO OUTPUT	VR901 VR902	NORMAL	GRAY SCALE
M. EQ.		SPEC.	
VECTOR SCOPE		DURING AWC PUSH VECTORS COLLECT TO CENTRE.	

(1).Aim the camera at the logarithmic gray scale chart.
(2).Supply the video signal from VCR section to the vector scope.
(3). Keep to press the AWC SW on
(4).Adjust the AWC offset controls (VR901 and VR902) so that the colour signal vectors centre on the vector scope.

B. WITH OSCILLOSCOPE

TP	ADJ.	IRIS	CHART
TP9	VR901 VR902	NORMAL	GRAY SCALE
M. EQ.		SPEC.	
OSCILLOSCOPE		MINIMUM WAVEFORM	

(1).Aim the camera at the logarithmic gray scale chart.
(2).Connect the scope to TP9(H.rate).
(3).Keep to press the AWC SW on.
(4).Adjust the AWC offset controls (VR901 and VR902) so that the colour signal waveform is minimized.

30. AWT SENSOR OUTPUT ADJUSTMENT

TP	ADJ.	IRIS	CHART
TP11	VR502	AUTO	GRAY SCALE
TP11 (HOT) TP21 (GND)			
M. EQ.		**SPEC.**	
D.V.M		1.7V	
		20mV±5mV	

(1).Set the white balance select switch to FULL AUTO position.
(2).Set the Illumination on surface of the AWT sensor to 180Lx~700Lx (colour temperature is 3200 degrees K)
(3).Connect the D.V.M to TP11.
(4).Adjust the AWT sensor output (VR502) so that the voltage become 1.7V.
(5).Connect the D.V.M. between TP11 (HOT) and TP21 (GND).
(6).Adjust the AWT sensor control so that the sensor voltage is 20mV+-5mV.

31. AWT SENSOR LOW ILLUMINATION CUT ADJUSTMENT

TP	ADJ.	IRIS	CHART
P501-(2)	VR501	AUTO	
M. EQ.		**SPEC.**	
D.V.M		3.0V~4.6V	

(1).Set the white balance select switch to "FULL AUTO" position.
(2).Set the Illumination on surface of the AWT sensor to 5Lx+-0.5Lx.
(3).Adjust the low illumination cut (VR501) so that the voltage (P501-2) is 3.0V~4.6V.
(4).Confirm that the voltage (P501-2) becomes 0~1V more than 7Lx.

32. AWT WHITE BALANCE ADJUSTMENT

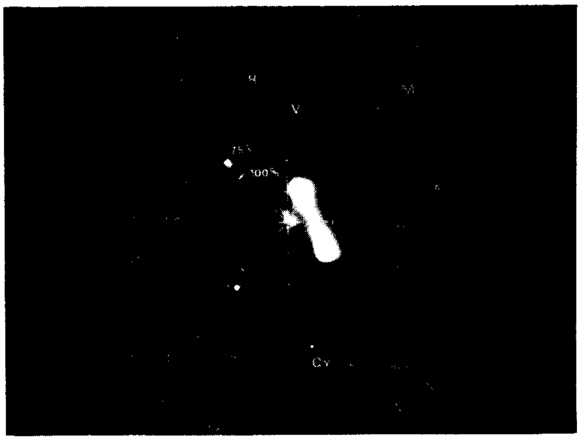
A. WITH VECTOR SCOPE

TP	ADJ.	IRIS	CHART
VIDEO OUTPUT	VR302 VR309	AUTO	WHITE CARD
M. EQ.		**SPEC.**	
VECTOR SCOPE		VECTORS CENTRE	

(1).Set the white balance select switch to "FULL AUTO" position.
(2).Aim the camera at the white card.
(3).Supply the video output signal to the vector scope.
(4).Adjust the white balance (VR302 and VR309) so that the colour vectors come centre position on the vector scope and then confirm the R/B gamma adjustment.

Note:
1. The vector scope has to be terminated (75 ohm), during adjusting
2. Make sure that the colour temperature of sensor surface is same as the surface of test chart.

BEFORE ADJ.



AFTER ADJ.

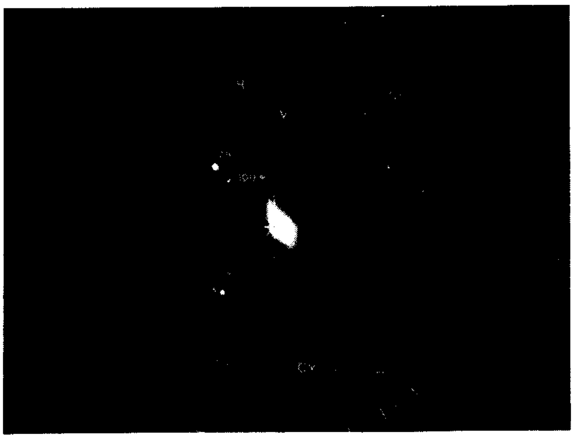


Fig.E37

B. WITH OSCILLOSCOPE

TP	ADJ.	IRIS	CHART
TP9	VR302 VR309	AUTO	WHITE CARD
M. EQ.		**SPEC.**	
OSCILLOSCOPE		MINIMUM WAVEFORM	

(1).Connect the CH1 of the scope to TP9 (H.rate).
(2).Adjust the white balance (VR302 and VR309) so that the waveform is minimized.

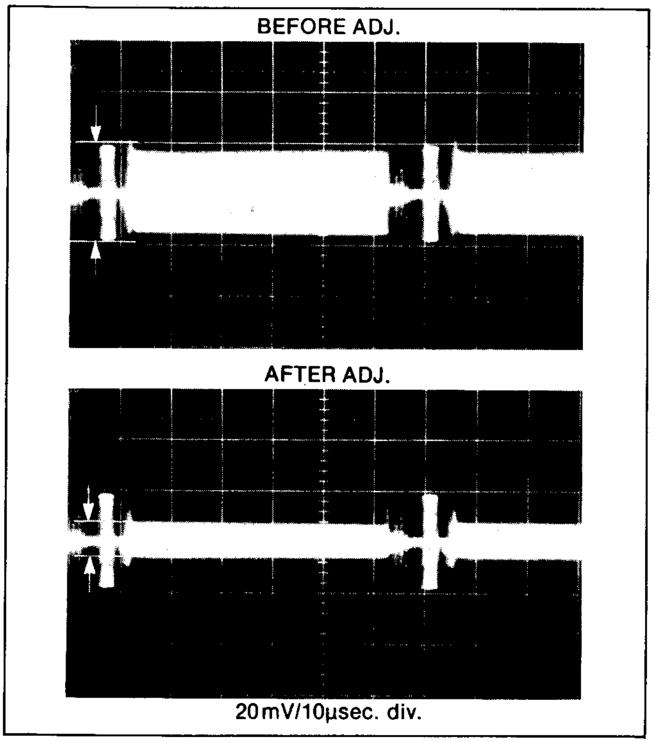


Fig.E38

33. AWT WHITE TRACKING ADJUSTMENT

A. WITH VECTOR SCOPE

TP	ADJ.	IRIS	CHART
VIDEO OUTPUT	VR324 VR325	AUTO	REFER TO NOTE 2.

M. EQ.	SPEC.
VECTOR SCOPE	VECTORS CENTRE

(1).Set the white balance select switch to "FULL AUTO" position.
(2).Set the camera in specific condition (Refer to note 2).
(3).Supply the video output signal to the vector scope.
(4).Adjust the white balance (VR324 and VR325) so that the colour vectors come centre position on the vector scope.

Note: 1
The vector scope has to be terminated (75 ohms), during adjusting.

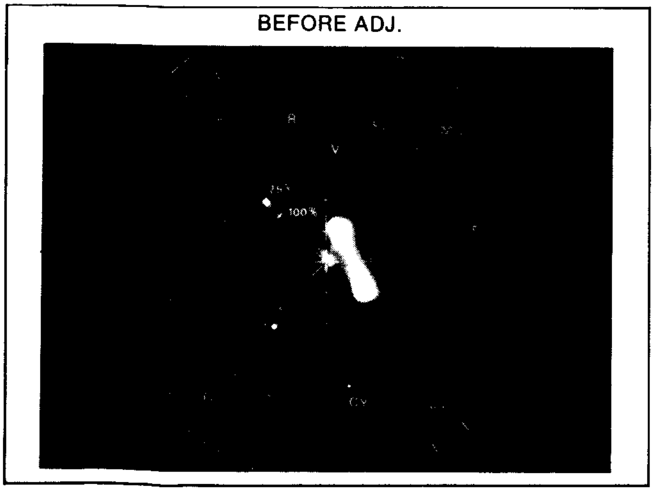


Fig. E39 (A)

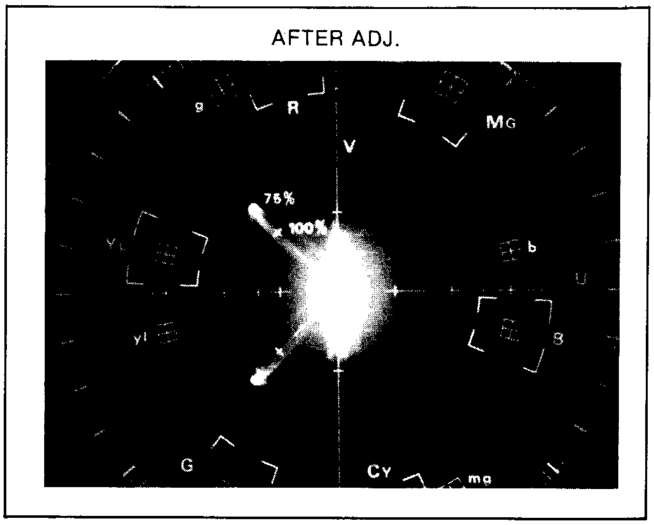


Fig.E39 (B)

B. WITH OSCILLOSCOPE

TP	ADJ.	IRIS	CHART
TP9	VR324 VR325	AUTO	REFER TO NOTE 2.

M. EQ.	SPEC.
OSCILLOSCOPE	MINIMUM WAVEFORM

(1).Set the camera in specific condition (Refer to note 2).
(2).Connect the CH1 of the scope to TP9 (H.rate).
(3).Adjust the white balance (VR324 and VR325) so that the waveform is minimized.

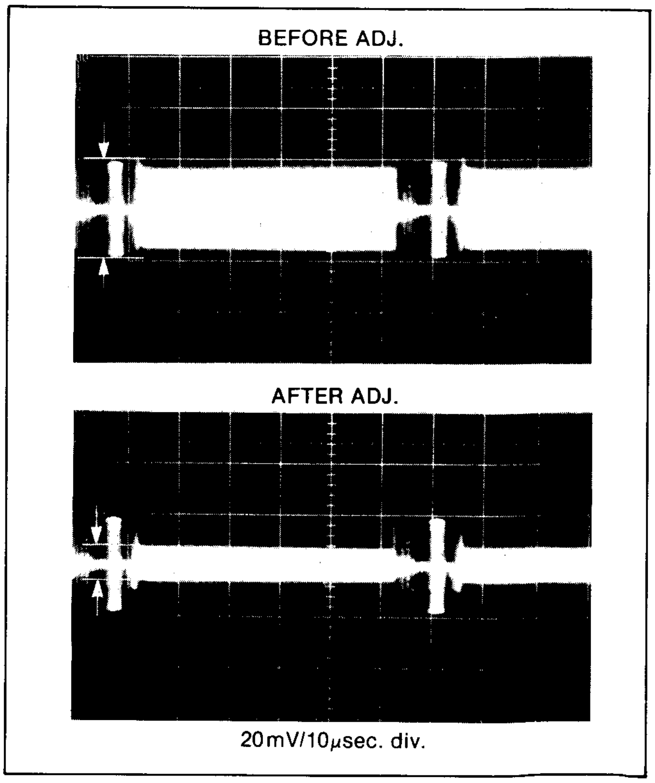
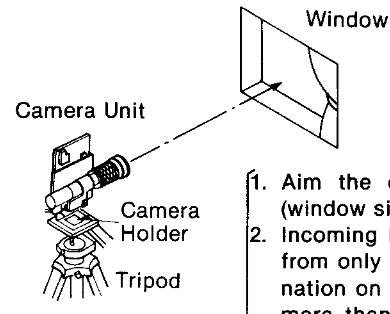


Fig.E40

Note 2:
To achieve this adjustment completely, set the measuring equipment as either of two examples.

(Example 1)

1. Aim the camera to outdoor (window side as possible as white object)
2. Incomming light must be coming from only out door.
   Illumination on the AWT sensor must be more than 500lux.

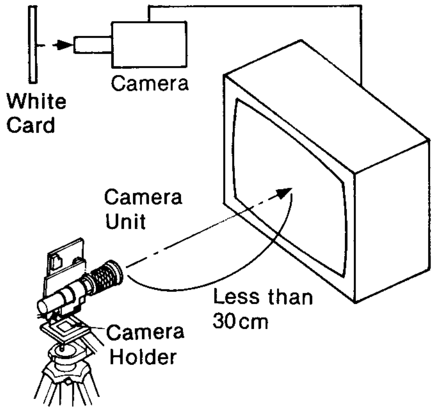

Window
Camera Unit
Camera Holder
Tripod

1. Aim the camera to outdoor (window side).
2. Incoming light must be come from only out door and illumination on the sensor must be more than 500Lx. and colour tempreture have to be within 5800～6500 degree kelbin.

Fig.E41

(Example 2)

1. Aim the camera to the Monitor TV with white cap on the lens.
2. Illumination on the AWT sensor must be more than 500Lx.


White Card
Camera
Camera Unit
Less than 30cm
Camera Holder

1. Aim the camera to the TV Monitor with white cap on the lens from less the 30cm distance.
2. Set the TV Monitor at the white picture by using another camera which is shooting the white card.
   Or set the TV/VIDEO Selector of TV Monitor to video side and do not supply any video signal to video input.
3. Illumination on the AWT sensor must be more than 500Lx.
4. Make sure that the brightness control is centre position.

Fig.E42

Note 3:
Colour temperature have to be within 5800~6500 degrees kelbin.

Note 4:
After completion of above adjustment make recording at outdoor and comfirm playback picture so that colouring is natural.

AUTO FOCUS SECTION

AUTO FOCUS ADJUSTMENT PROCEDURES

LOCATION OF THE AUTO FOCUS ADJUSTMENT POINT

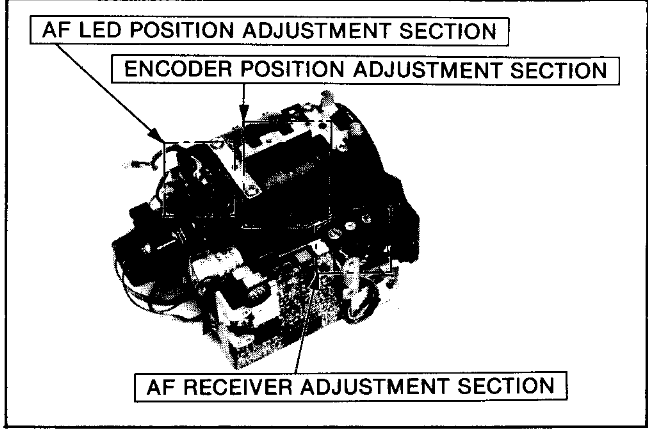

AF LED POSITION ADJUSTMENT SECTION
ENCODER POSITION ADJUSTMENT SECTION
AF RECEIVER ADJUSTMENT SECTION

Fig. E43

Note:

1. Distance that is mentioned in this manual means distance between the camera lens and the object (for example:chart) when the focus lens is set to infinity (∞)
2. If you disconnect the connector P2 on the AF C.B.A (VEP00F61A), Auto Focus does't work.

1. AF LED POSITION ADJUSTMENT

TP	ADJ.	IRIS	CHART
	AF LED CONTROL SCREW (REFER TO FIG. E46)	AUTO	CROSS CHART
M. EQ.		SPEC.	
TV MONITOR IR CAMERA			

(1).Set the Focus mode selector to "AUTO" position.
(2).Set the zoom lens to 54mm.
(3).Aim the camera at the cross chart as shown in Fig.E47, in 2930mm distance so that the cross point of the chart comes to centre on the TV monitor.
(4).Set the lighting to dim.
(5).Set the measuring equipment as shown below.

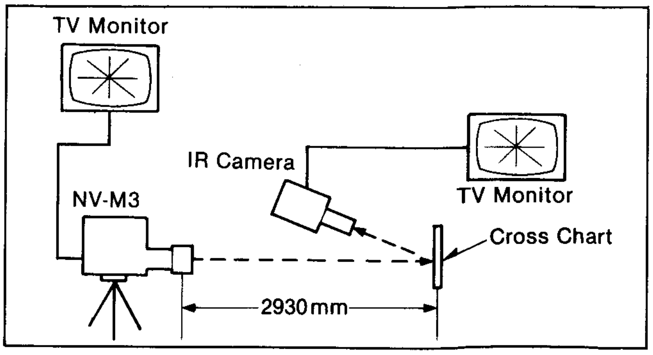

TV Monitor
IR Camera
NV-M3
TV Monitor
Cross Chart
2930mm

Fig. E44 Setting of the Measuring Equipment

(6).Adjust the AF LED FOCUS control screw (A) so that the infrared signal is just in focus (become small and clear as possible) on the cross chart refer to Fig. E45.

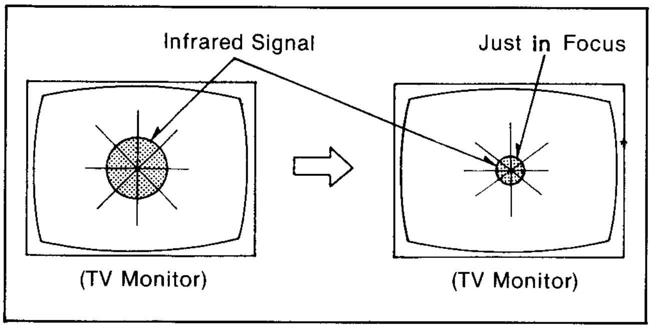

Infrared Signal
Just in Focus
(TV Monitor)
(TV Monitor)

Fig. E45

(7).Adjust the AF LED position control screw (B and C) so that the infrared signal strikes centre of the cross chart, even if the zoom lens moves from wide to Tele and from tele to wide, refer to Fig. E46.

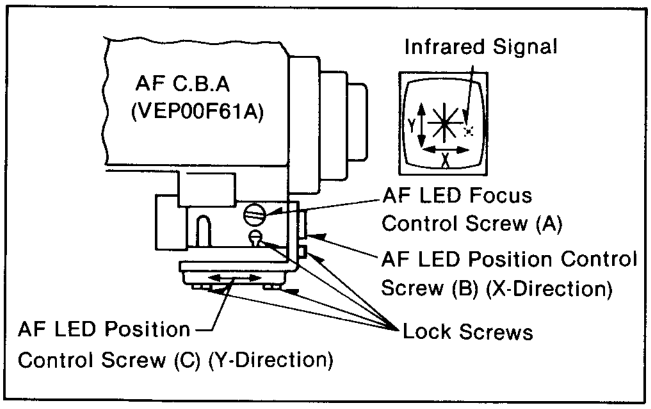

AF C.B.A
(VEP00F61A)
Infrared Signal
Y
X
AF LED Focus Control Screw (A)
AF LED Position Control Screw (B) (X-Direction)
Lock Screws
AF LED Position Control Screw (C) (Y-Direction)

Fig. E46

Note 1:
Please make the cross chart that is written in bold script on the white paper as shown below.

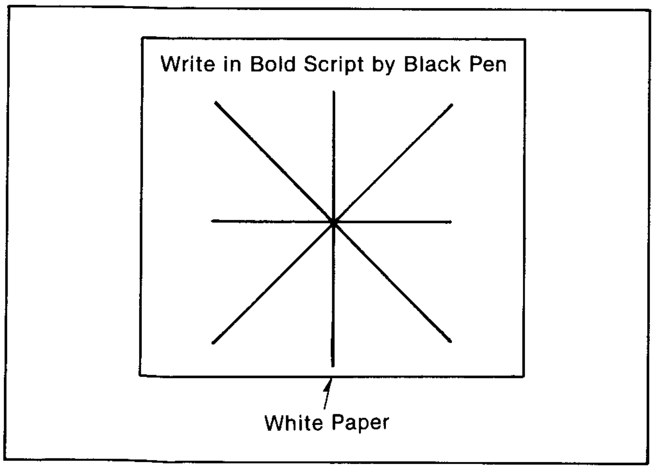

Write in Bold Script by Black Pen
White Paper

Fig. E47

Note 2:
·If you replace the only IR LED unit, adjust the AF LED position screw (B and C) watching the TV Monitor so that the picture is just in focus on the TV Monitor.

Note 3:
If you don't have the IR camera, modify the normal camera, so as to remove the Infrared cut filter from the front of the pick-up tube as shown below.

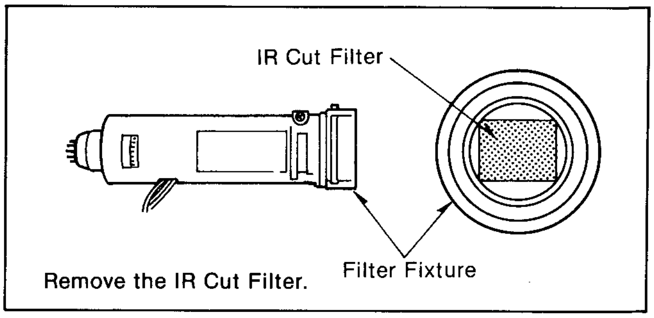

IR Cut Filter
Remove the IR Cut Filter.
Filter Fixture

Fig. E48

2. AF LED CURRENT ADJUSTMENT

TP	ADJ.	IRIS	CHART
TP4 (HOT) TP5 (GND)	VR3	AUTO	
M. EQ.		**SPEC.**	
OSCILLOSCOPE		600mV	

(1).Set the Focus mode selector to "AUTO" position.
(2).Blind the AF receiver unit to cut of infrared signal.
(3).Connect the scope to TP4(HOT) and TP5(GND).
(4).Adjust the AF LED current (VR3) so that the waveform is 600mV.

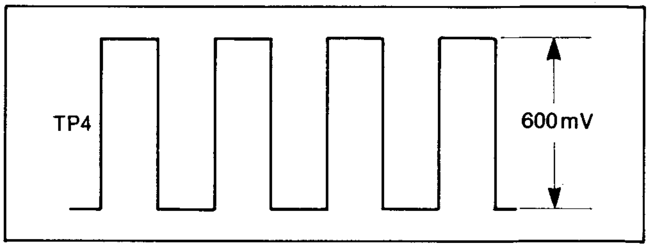


Fig. E49

3. OFF SET ADJUSTMENT

TP	ADJ.	IRIS	CHART
TP1 (CH-1) TP2 (CH-2)	VR1 VR2	AUTO	
M. EQ.		**SPEC.**	
OSCILLOSCOPE		(REFER TO FIG. E50)	

(1).Set the Focus mode selector to "AUTO" position.
(2).Blind the AF receiver unit to cut of infrared signal.
(3).Connect the scope to TP1(CH-1) and TP2(CH-2), and connect the External triger to TP3.

(4).Adjust the off set control (VR1,VR2) so that a swing (A) and (B) of waveform is the same as up and down, and minimize as posible (refer to Fig.E50)

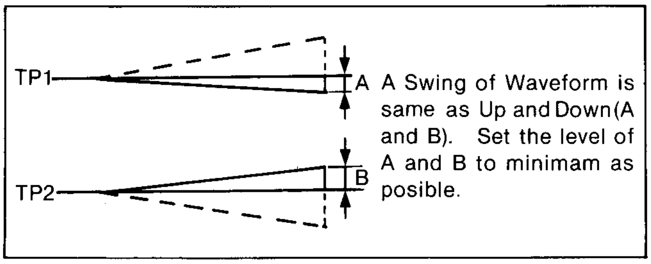

TP1
TP2
A
B
A Swing of Waveform is same as Up and Down(A and B). Set the level of A and B to minimam as posible.

Fig.E50

4. ENCODER POSITION ADJUSTMENT

TP	ADJ.	IRIS	CHART
	ENCODER (REFER TO FIG. E43)	AUTO	CROSS CHART

M. EQ.	SPEC.
ENCODER JIG	

(1).Set the Focus mode selector to "MANUAL" position.
(2).Aim the camera at the cross chart as shown in Fig. E47 in 1208mm distance.
(3).Solder the encoder JIG to the connector P6 of the AF C.B.A (VEP00F61A) as shown below.

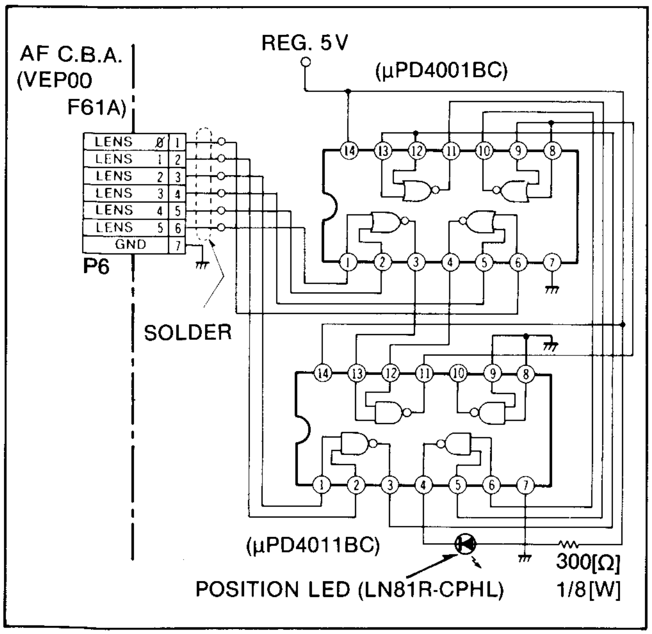

AF C.B.A. (VEP00 F61A)
REG. 5V
(μPD4001BC)
LENS Ø 1
LENS 1 2
LENS 2 3
LENS 3 4
LENS 4 5
LENS 5 6
GND 7
P6
SOLDER
(μPD4011BC)
POSITION LED (LN81R-CPHL)
300[Ω] 1/8[W]

Fig.E51

(4).Remove the camera sensor circuit board (VJB20187).

Note 1:
Disconnect the connector P2 from the AF C.B.A (VEP0061A)
(5).Loose the clamp screws (A) as shown in Fig E52.
Slide the Encorder plate as arrow mark shown in Fig E52 so that the position LED of encoder JIG light up.

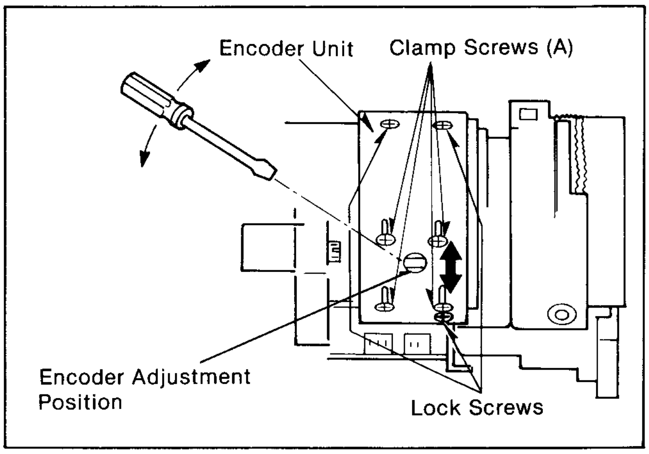

Encoder Unit
Clamp Screws (A)
Encoder Adjustment Position
Lock Screws

Fig.E52

5. AF RECEIVER (1) ADJUSTMENT

TP	ADJ.	IRIS	CHART
TP2	PSD1	AUTO	BLACK CHART

M. EQ.	SPEC.
OSCILLOSCOPE	REST TIME (T) IS MINIMIZED (REFER TO FIG. E54)

(1).Set the Focus mode selector to "AUTO" position.
(2).Aim the camera at the black chart as shown in Note 1, in 1130mm distance.
(3).Set the zoom lens to 30mm
(4).Connect the scope to TP2.
(5).Loose the lock screw, refer to Fig.E53.
(6).Adjust the AF receiver control (PSD1) so that the rest time(T) is minimized. (Refer to Fig.E54)

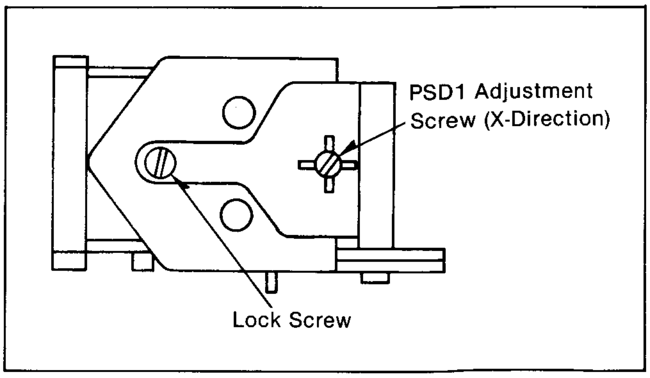

PSD1 Adjustment Screw (X-Direction)
Lock Screw

Fig.E53

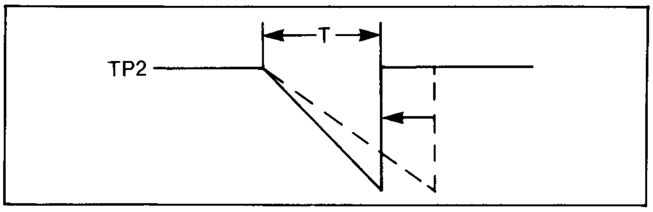


Fig.E54

Note 1:
Please make the black chart that is written black on the white paper by black pen.

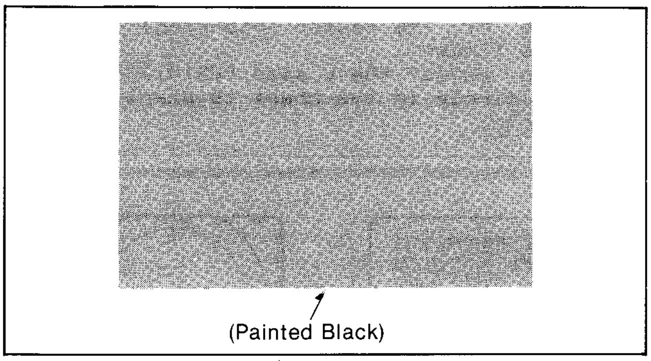


Fig.E55 Black Chart

Note 2:
(1) To make this adjustment, use external trigger for the scope, that supplys from TP3 of the AF C.B.A (VEP00F61A) and triggers at falling edge.
(2) Set the room lighting to dim (100Lx~150Lx)

6. AF RECEIVER (2) ADJUSTMENT

TP	ADJ.	IRIS	CHART
TP2	PSD2	AUTO	WHITE CARD
M. EQ.		**SPEC.**	
OSCILLOSCOPE		40mV~60mV	

(1).Set the Focus mode selector to "AUTO" position.
(2).Aim the camera at the white card, in 12.93m distance.
(3).Connect the scope to TP2.
(4).Loose the lock screw,refer to Fig.E56.
(5).Adjust the AF receiver control (PSD2) so that the waveform is 40mV~60mV as Fig.E57.

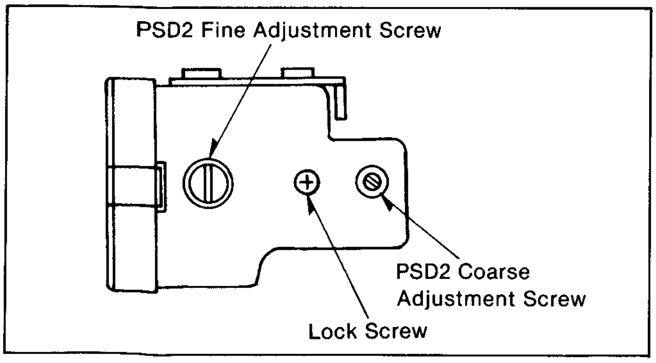


Fig.E56

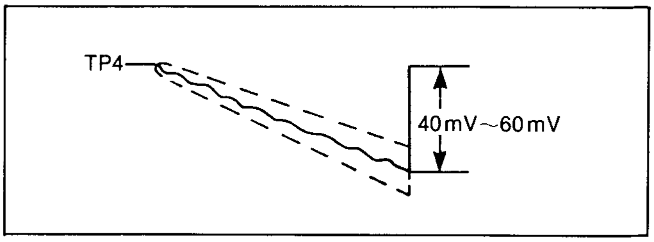


Fig. E57

Note 1:
To make this adjustment, use external trigger for the scope, that supplies from TP3 of the AF C.B.A. (VEP00F61A) and triggers at the falling edge.

Note 2:
If you do not have space for 13m, adjust the AF receiver control as follows.
(1).Set the Focus mode selector to "AUTO" position.
(2).Aim the camera at the white card, more than 6m far.
(3).Adjust the AF receiver control (PSD2) watching the TV Monitor so that the object is just in focus on the TV Monitor.

7. D/A CONVERTER ADJUSTMENT

TP	ADJ.	IRIS	CHART
	VR4	AUTO	CROSS CHART
M. EQ.		**SPEC.**	
TV MONITOR		JUST IN FOCUS	

(1).Set the Focus mode selector to AUTO position.
(2).Aim the camera at the cross chart, in 1440mm distance.
(3).Adjust the D/A control (VR4) so that the picture on the TV monitor screen is just in focus.

EVF ADJUSTMENT PROCEDURES

PREPARATION

The following adjustments are for the electronic view finder.

(1).Connect the view finder connector to the EVF connector on the unit.
(2).The camera circuit must be completly aligned before viewfinder adjustment is made.

1. HORIZONTAL HOLD ADJUSTMENT

TP	ADJ.	IRIS	CHART
PIN 22 OF IC101	VR102		
M. EQ.		SPEC.	
FREQUENCY COUNTER		15.6kHz±0.2kHz	

(1).Connect the frequency counter to Pin.22 of IC101.
(2).Adjust the horizontal hold control (VR102) so that the frequency is 15.6 KHz+-0.2KHz.

2. PICTURE TILT ADJUSTMENT

TP	ADJ.	IRIS	CHART
VIEW FINDER	DEFLECTION COIL	CLOSED	
M. EQ.		SPEC.	
VIEW FINDER		RASTER IS STRAIGHT.	

(1).Reduce picture size using the EVF V.size (VR101).
(2).Loosen the deflection coil holding screw.
(3).Turn the iris control fully counter clockwise (CLOSE side).
(4).Observe the viewfinder, and turn the deflection coil until the raster is straight.
(5).Tighten the deflection coil holding screw.

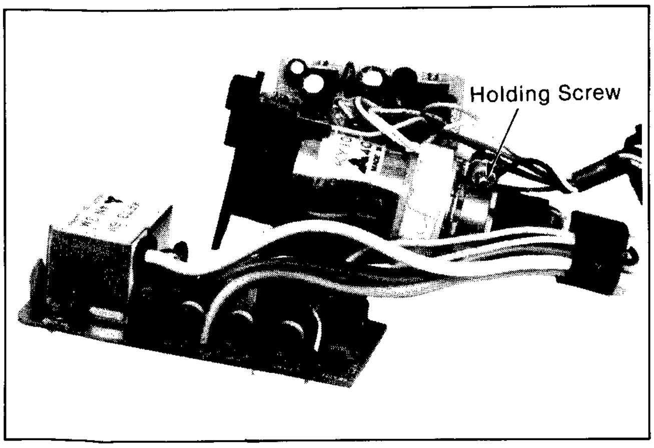


Fig. E58

3. EVF V-SIZE AND H-SIZE ADJUSTMENT

TP	ADJ.	IRIS	CHART
	TF201 VR101	NORMAL	BALL CHART
M. EQ.		SPEC.	
VIEW FINDER		DISAPPER THE BALL CHART EDGE TRUE CIRCLE AS FIG. E59	

(1).Aim the camera at the ball chart, and line up the reference arrow head with edge of the raster (blanking) on the view finder.
(2).Then adjust the V.size (VR101) so that the circle in the chart is nearly a true circle.

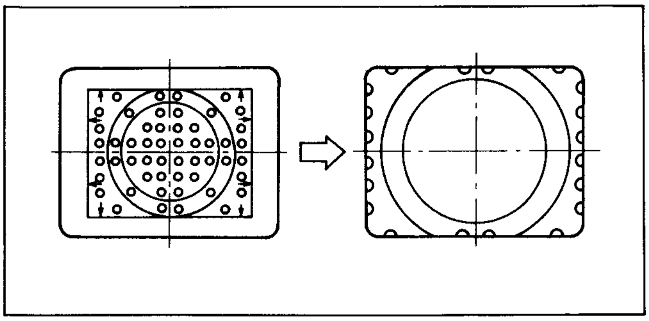


Fig.E59

4. CONTRAST AND BRIGHTNESS ADJUSTMENT

TP	ADJ.	IRIS	CHART
	VR203 VR202	NORMAL	GRAY SCALE
M. EQ.		SPEC.	
VIEW FINDER		NATURAL GRADATION	

(1).Aim the camera at the logarithmic gray scale chart.
(2).Adjust the contrast control (VR203) and brightness control (VR202) so that the black and white gradation will be same on the view finder screen as that in the monitor.

5. FOCUS ADJUSTMENT

TP	ADJ.	IRIS	CHART
	VR201	NORMAL	BALL CHART
M. EQ.		SPEC.	
VIEW FINDER		BEST RESOLUTION	

(1).Aim the camera at the ball chart.
(2).Adjust the focus control (VR201) for best resolution in the view finder.

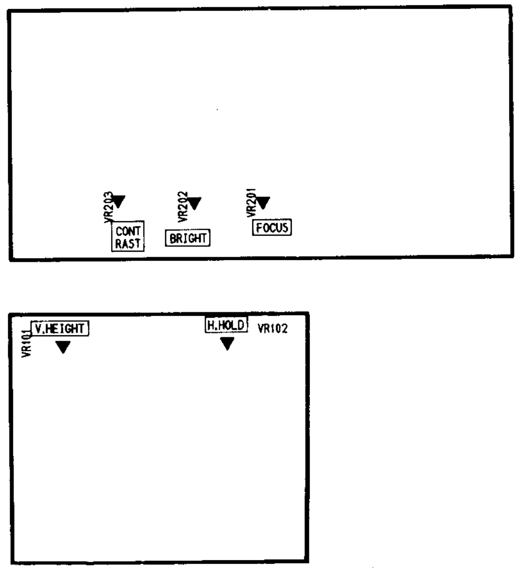
FOR SCOPE TRIGGER

H. rate : TP10

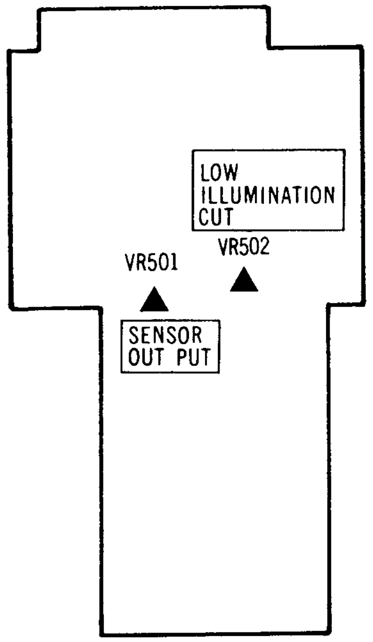
V. rate : TP14

LOCATION OF TEST POINTS AND CONTROLS (CAMERA SECTION)

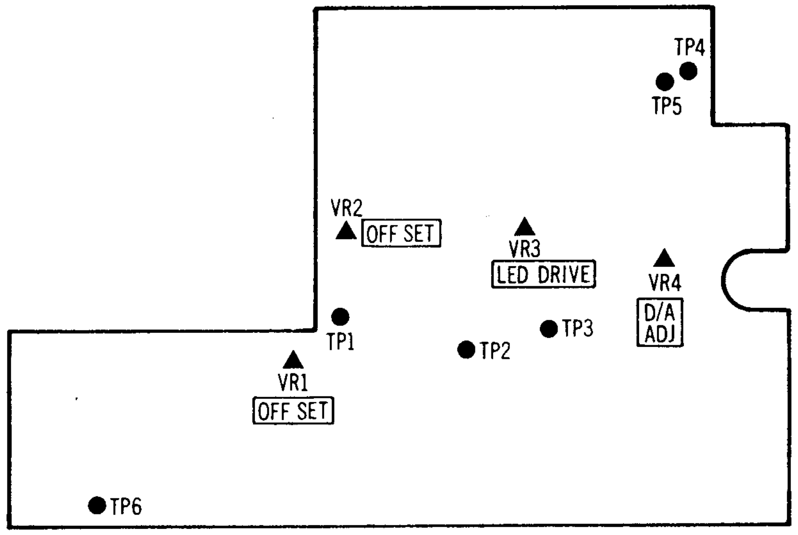
E.V.F. —— COMPONENT SIDE ——


VR203
CONT RAST
VR202
BRIGHT
VR201
FOCUS
VR101
V.HEIGHT
H.HOLD
VR102

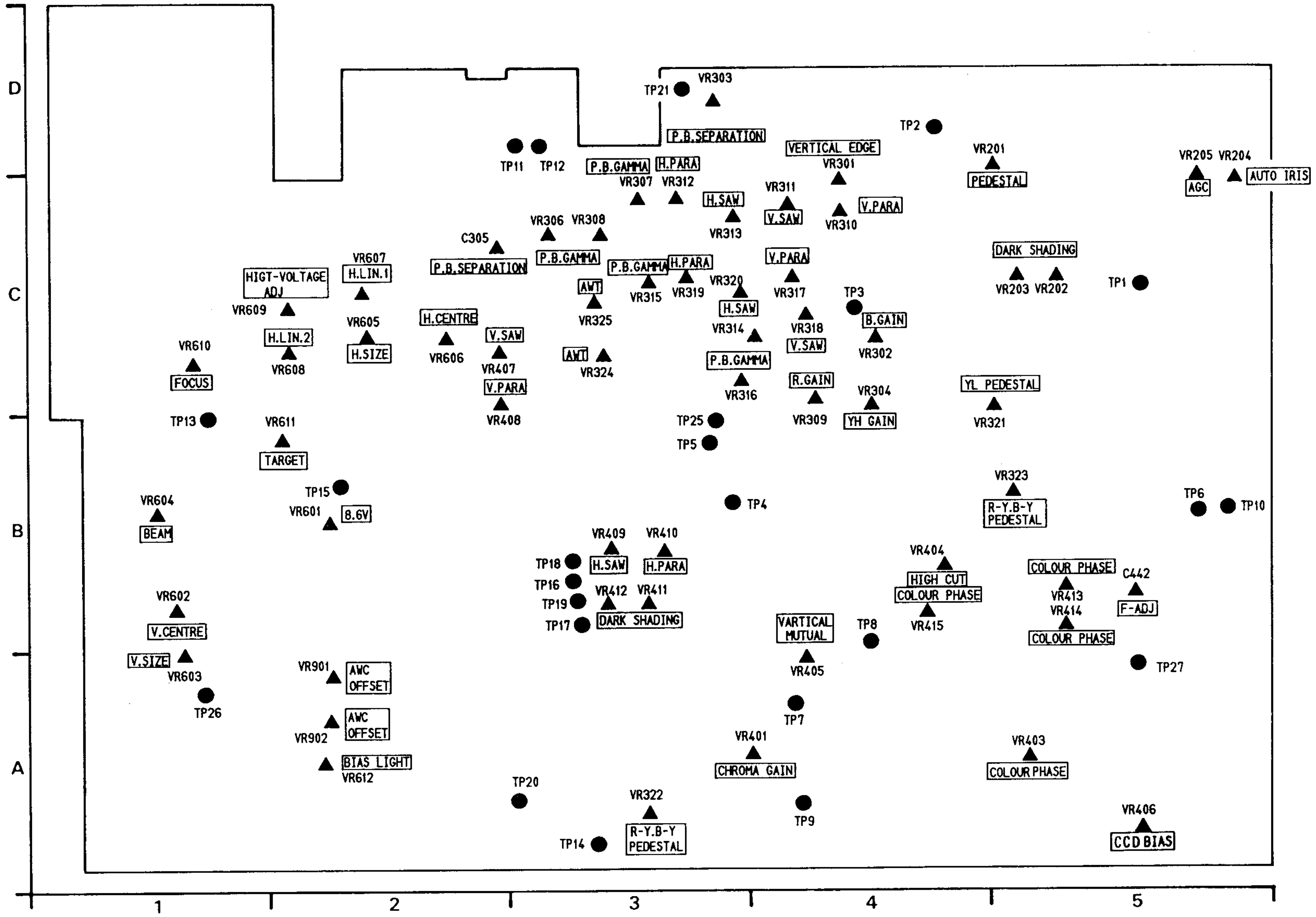
CAMERA SENSOR —— COMPONENT SIDE ——


LOW ILLUMINATION CUT
VR501
VR502
SENSOR OUT PUT

AUTO FOCUS —— COMPONENT SIDE ——


TP4
TP5
VR2
OFF SET
VR3
LED DRIVE
VR4
D/A ADJ
TP1
TP3
TP2
VR1
OFF SET
TP6

CAMERA MAIN —— COMPONENT SIDE ——


D
C
B
A
1
2
3
4
5
TP21
VR303
P.B.SEPARATION
TP2
VERTICAL EDGE
VR301
VR201
PEDESTAL
VR205
VR204
AGC
AUTO IRIS
TP11
TP12
P.B.GAMMA
H.PARA
VR307
VR312
H.SAW
VR313
VR311
V.SAW
VR310
V.PARA
VR306
VR308
C305
P.B.SEPARATION
P.B.GAMMA
P.B.GAMMA
H.PARA
VR315
VR319
VR320
H.SAW
V.PARA
VR317
TP3
B.GAIN
VR302
DARK SHADING
VR203
VR202
TP1
HIGT-VOLTAGE ADJ
VR609
VR607
H.LIN.1
VR605
H.SIZE
H.LIN.2
VR608
H.CENTRE
VR606
V.SAW
VR407
V.PARA
VR408
AWT
VR325
AWT
VR324
VR314
P.B.GAMMA
VR316
VR318
V.SAW
R.GAIN
VR309
VR304
YH GAIN
YL PEDESTAL
VR321
VR610
FOCUS
TP13
VR611
TARGET
TP25
TP5
VR323
R-Y.B-Y PEDESTAL
TP6
TP10
VR604
BEAM
TP15
VR601
8.6V
TP4
VR409
VR410
TP18
H.SAW
H.PARA
TP16
VR412
VR411
TP19
TP17
DARK SHADING
VR404
HIGH CUT
COLOUR PHASE
VR415
COLOUR PHASE
VR413
VR414
COLOUR PHASE
C442
F-ADJ
VR602
V.CENTRE
V.SIZE
VR603
TP26
VARTICAL MUTUAL
VR405
TP8
TP27
VR901
AWC OFFSET
VR902
AWC OFFSET
BIAS LIGHT
VR612
TP7
VR401
CHROMA GAIN
VR403
COLOUR PHASE
TP20
VR322
R-Y.B-Y PEDESTAL
TP14
TP9
VR406
CCD BIAS

CAMERA MAIN CIRCUIT BOARD TP & CONTROL ADDRESS INFORMATION

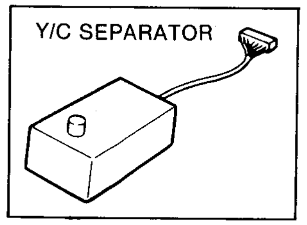
Test Point		VR202	C-5	VR403	A-5
TP1	C-5	VR203	C-5	VR404	B-4
TP2	D-4	VR204	C-5	VR405	A-4
TP3	C-4	VR205	C-5	VR406	A-5
TP4	B-3	VR301	C-4	VR407	C-2
TP5	B-3	VR302	C-4	VR408	C-2
TP6	B-5	VR303	D-3	VR409	B-3
TP7	A-4	VR304	C-4	VR410	B-3
TP8	B-4	VR306	C-3	VR411	B-3
TP9	A-4	VR307	C-3	VR412	B-3
TP10	B-5	VR308	C-3	VR413	B-5
TP11	D-3	VR309	C-4	VR414	B-5
TP12	D-3	VR310	C-4	VR415	B-4
TP13	B-1	VR311	C-4	VR601	B-2
TP14	A-3	VR312	C-3	VR602	B-1
TP15	B-2	VR313	C-3	VR603	A-1
TP16	B-3	VR314	C-4	VR604	B-1
TP17	B-3	VR315	C-3	VR605	C-2
TP18	B-3	VR316	C-3	VR606	C-2
TP19	B-3	VR317	C-4	VR607	C-2
TP20	A-3	VR318	C-4	VR608	C-2
TP21	D-3	VR319	C-3	VR609	C-2
TP25	B-3	VR320	C-3	VR610	C-1
TP26	A-1	VR321	C-5	VR611	B-2
TP27	A-5	VR322	A-3	VR012	A-2
		VR323	B-5	VR901	A-2
Adjustment		VR324	C-3	VR902	A-2
		VR325	C-3	C305	C-2
VR201	D-5	VR401	A-4	C442	B-5

2-4-2. ELECTRICAL ADJUSTMENT FOR VTR SECTION

TEST EQUIPMENT AND TOOL

The following equipment is required for adjustment of the VTR section of NV-M3.

EQUIPT	SPECIFICATION
1. VTVM(Vacuum Tube Volt Meter) or DVM(Digital Volt Meter)	Voltage Range:0.001~50V
2. Dual Trace Osc-illoscope	Voltage Range:0.005~50V /div. Frequency Range:0~10MHz Probe:10:1 and 1:1
3. Frequency Counter	Frequency Range:0~10MHz
4. Signal Sweep (Sinewave)	Frequency Range:0~10MHz
5. Video Sweep (Generator)	Frequency Range:0~10MHz
6. Y/C Separator (Part No:VFK0304)	


Y/C SEPARATOR

This is used to supply external video signalto a video recorder unit.

Fig.E60

7. Colour Monitor TV.
8. Plastic Tip Driver
9. VHS Alignment Tape (VFJ8125H3F)

PREPARATION

1. Remove the casing panels and open the main circuit board.
2. Disconnect the connector between the camera section and VTR section.
3. Supply the video signal to the VTR unit using the Y/C Separator (VFK0304)

- If you use the Line Adaptor VW-KM3, Y/C Separator is not necessary. Please use the only Line Adaptor.

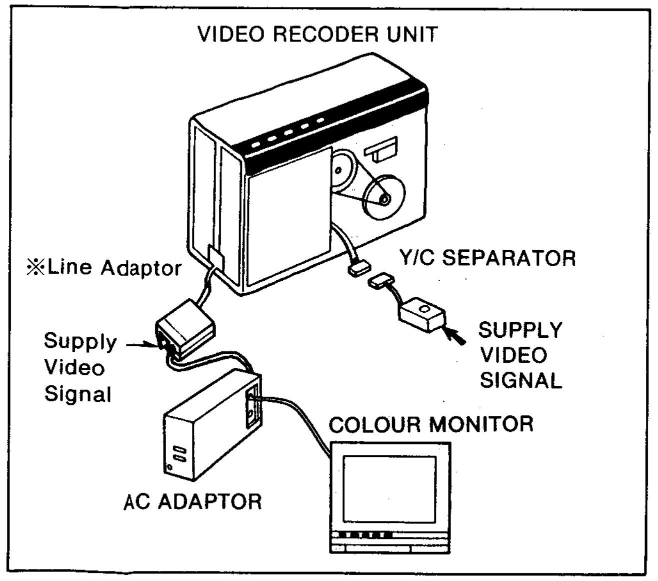
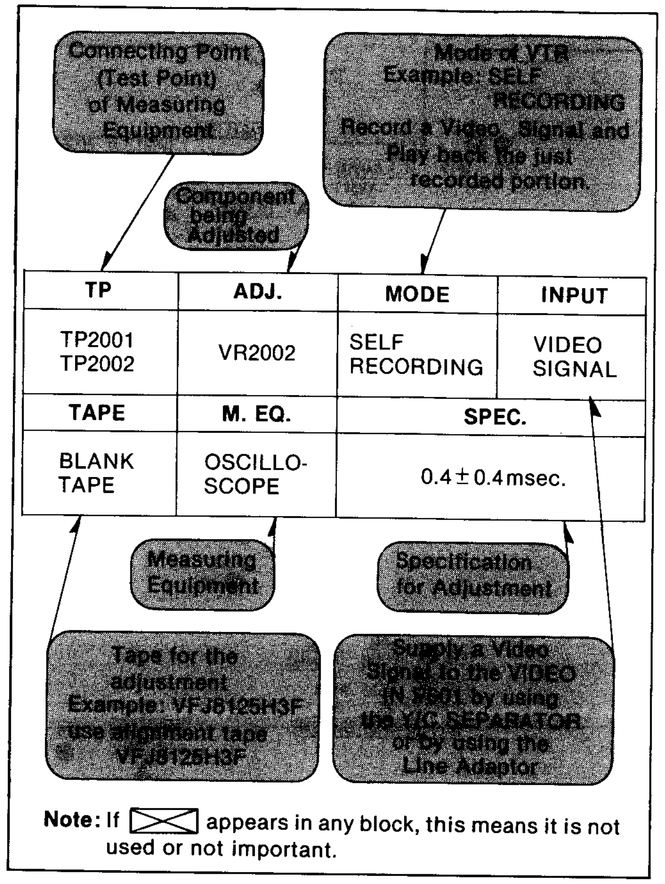

VIDEO RECODER UNIT
※Line Adaptor
Y/C SEPARATOR
Supply Video Signal
SUPPLY VIDEO SIGNAL
COLOUR MONITOR
AC ADAPTOR

Fig.E61

HOW TO READ THE ADJUSTMENT PROCEDURES


Connecting Point (Test Point) of Measuring Equipment
Component being Adjusted
Mode of VTR Example: SELF RECORDING Record a Video Signal and Play back the just recorded portion.
Measuring Equipment
Specification for Adjustment
Tape for the adjustment Example: VFJ8125H3F use alignment tape VFJ8125H3F
Supply a Video Signal to the VIDEO IN P601 by using the Y/C SEPARATOR or by using the Line Adaptor

TP	ADJ.	MODE	INPUT
TP2001 TP2002	VR2002	SELF RECORDING	VIDEO SIGNAL
TAPE	**M. EQ.**	**SPEC.**	
BLANK TAPE	OSCILLO-SCOPE	0.4±0.4msec.	

Note: If ☒ appears in any block, this means it is not used or not important.

Fig. E62

FOR TRIGGERING OF THE OSCILLOSCOPE

To trigger the scope, the following test point is used.
H.rate :
TP3002
(Video Output)
V.rate :
TP3005 or TP2001
(Head Switching Signal)

1. REG. +5V ADJUSTMENT

TP	ADJ.	MODE	INPUT
TP1003	VR1003	REC·PLAY	☒
TAPE	**M. EQ.**	**SPEC.**	
BLANK TAPE	D.V.M.	5.1V±0.05V	

2. REG. +9V ADJUSTMENT

TP	ADJ.	MODE	INPUT
TP1002	VR1002	REC·PLAY	☒
TAPE	**M. EQ.**	**SPEC.**	
BLANK TAPE	D.V.M.	9.2V±0.05V	

3. UNDER CUT ADJUSTMENT

TP	ADJ.	MODE	INPUT
TP6009	VR6001	REC·PLAY	☒
TAPE	**M. EQ.**	**SPEC.**	
BLANK TAPE	OSCILLO-SCOPE	HIGH → PULSE → LOW	

(1).Supply the DC voltage 10.6V+-0.1VDC to the battery terminal.
Pay attention the polarity of power supply and battery terminal.
Red wire + (plus)
Black wire - (minus)
(2).Disconnect the multi connector of AC adaptor.
(3).Connect the scope to TP6009.
(4).Turn the under cut control (VR6001) fully counter clockwise.
(5).Turn VR6001 clockwise slowly until the waveform is changed from high to pulse train, then low.

4. CHARACTER POSITION ADJUSTMENT

TP	ADJ.	MODE	INPUT
VIEW FINDER	VR6003	STOP	☒
TAPE	**M. EQ.**	**SPEC.**	
☒	VIEW FINDER	CHARACTER IS CENTRE OF EVF	

(1).Connect the EVF unit to the VTR unit.
(2).Display the battery remaining indicator and counter number on the EVF.
(3).Adjust the osc control (VR6003) so that the character position is shown below.

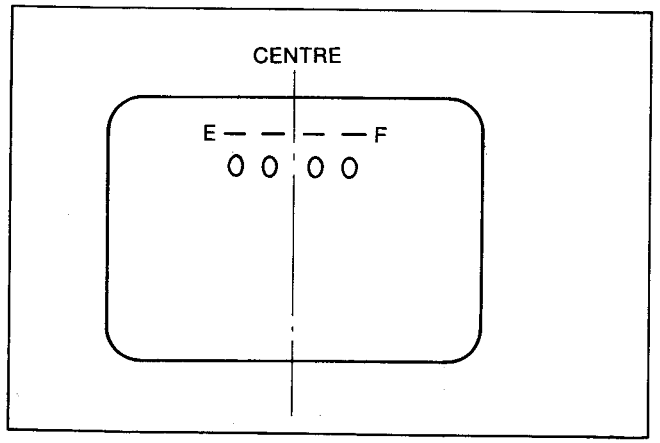

CENTRE
E— —|— —F
0 0 0 0

Fig. E63

5. PG SHIFTER ADJUSTMENT

TP	ADJ.	MODE	INPUT
TP2001 TP3002	VR2001	PLAY	☒
TAPE	**M. EQ.**	**SPEC.**	
ALIGNMENT TAPE (VFJ8125H3F)	OSCILLO-SCOPE	6H±0.5H	

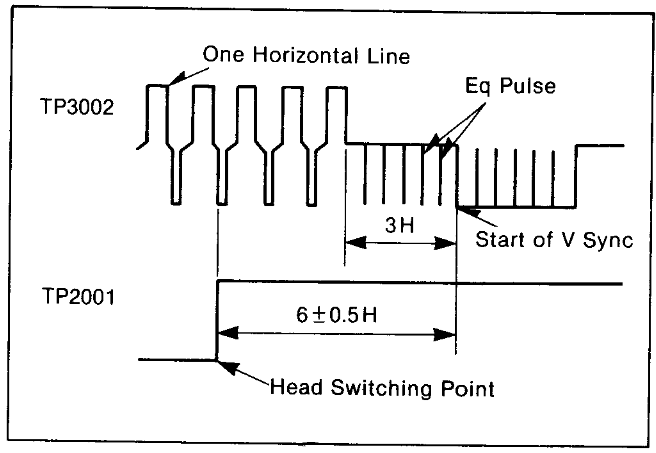

One Horizontal Line
Eq Pulse
TP3002
3H
Start of V Sync
TP2001
6±0.5H
Head Switching Point

Fig. E64

6. TRACKING FIX ADJUSTMENT

TP	ADJ.	MODE	INPUT
TP2001 TP2002	VR2002	SELF RECORDING	VIDEO SIGNAL
TAPE	**M. EQ.**	**SPEC.**	
BLANK TAPE	OSCILLO-SCOPE	0.4msec.±0.4msec.	

(1).Set the Tracking VR to the centre fix position.
(2).Record for a few minutes, and playback the just recorded portion.
(3).Adjust the tracking fix control (VR2002) so that the period of "T" is 0.4msec +-0.4msec as shown below.

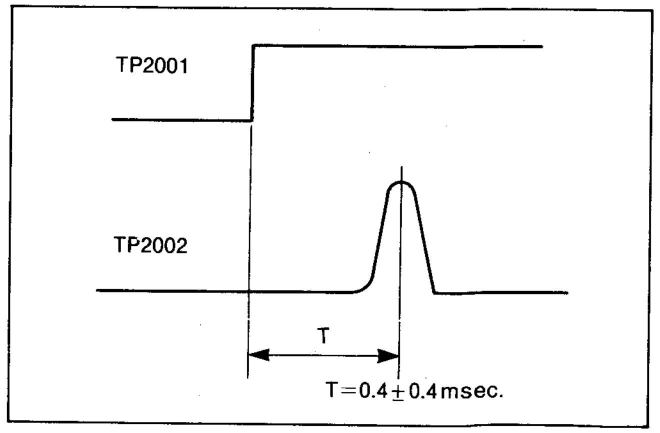

TP2001
TP2002
T
T=0.4±0.4msec.

Fig.E65

7. LUMINANCE RECORDING CURRENT ADJUSTMENT

TP	ADJ.	MODE	INPUT
TP3003 (HOT) TP3004 (GND)	VR3001	REC•PLAY	VIDEO SIGNAL
TAPE	**M. EQ.**	**SPEC.**	
BLANK TAPE	OSCILLO-SCOPE	290mV±10mVp-p	

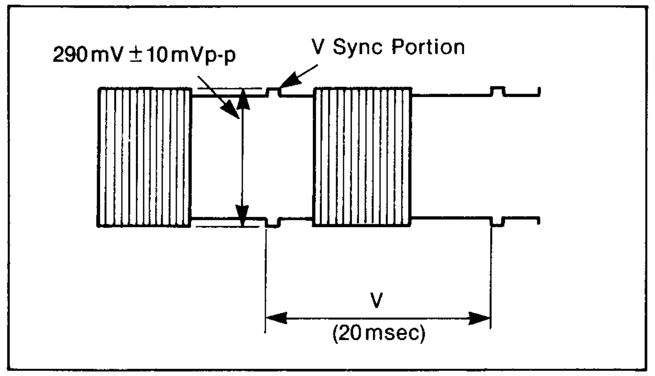

290mV±10mVp-p
V Sync Portion
V
(20msec)

Fig. E66

8. AUDIO BIAS CURRENT ADJUSTMENT

TP	ADJ.	MODE	INPUT
TP4002 (HOT) TP4003 (GND)	C4020	REC•PLAY	☒
TAPE	**M. EQ.**	**SPEC.**	
BLANK TAPE	D.V.M.	1.8mVrms±0.1mVrms	

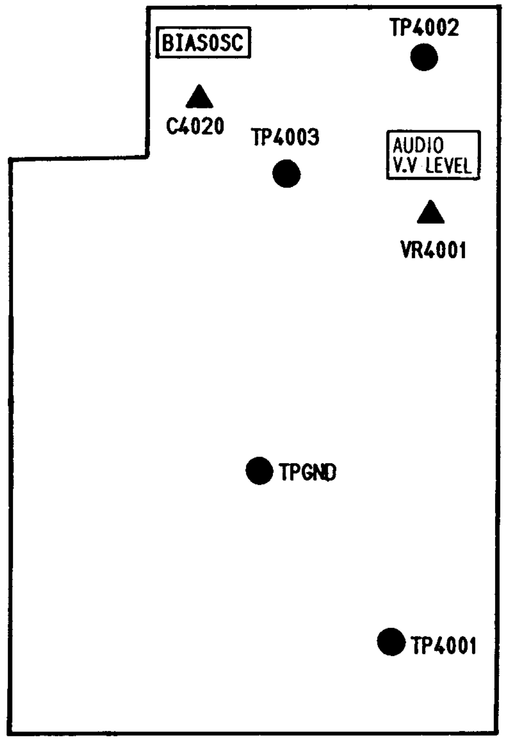
9. AUDIO PLAYBACK LEVEL ADJUSTMENT

TP	ADJ.	MODE	INPUT
LINE OUT	VR4001	SELF RECORDING	1kHz, AUDIO −60dB SIGNAL/ VIDEO SIGNAL
TAPE	**M. EQ.**	**SPEC.**	
BLANK TAPE	SIGNAL GENERA-TOR/D.V.M.	EE LEVEL=−8.0±2dB P.B LEVEL=−8.0±1dB	

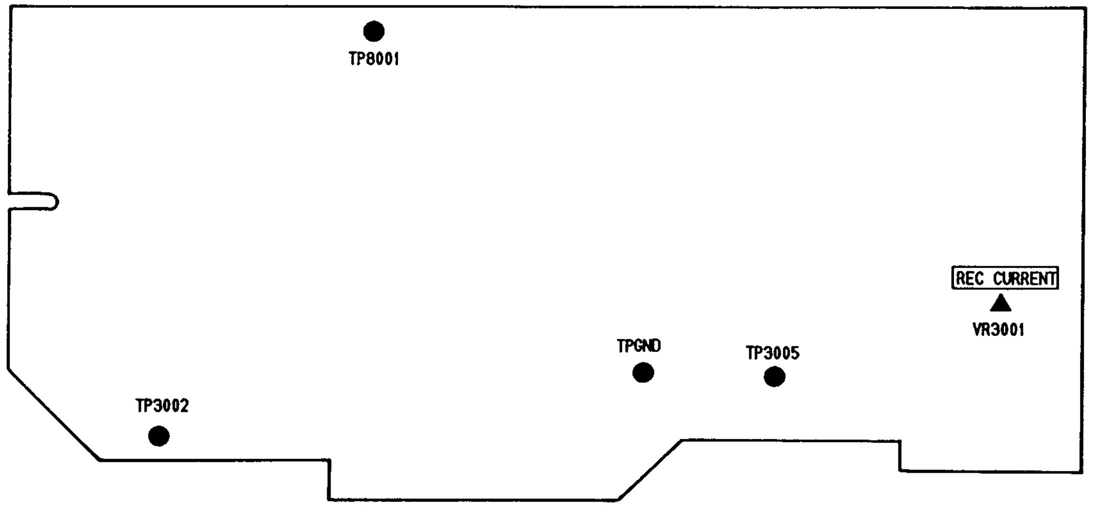
FOR SCOPE TRIGGER
H. rate : TP3002
V. rate : TP2001 or TP3005

LOCATION OF TEST POINTS AND CONTROLS (VTR SECTION)

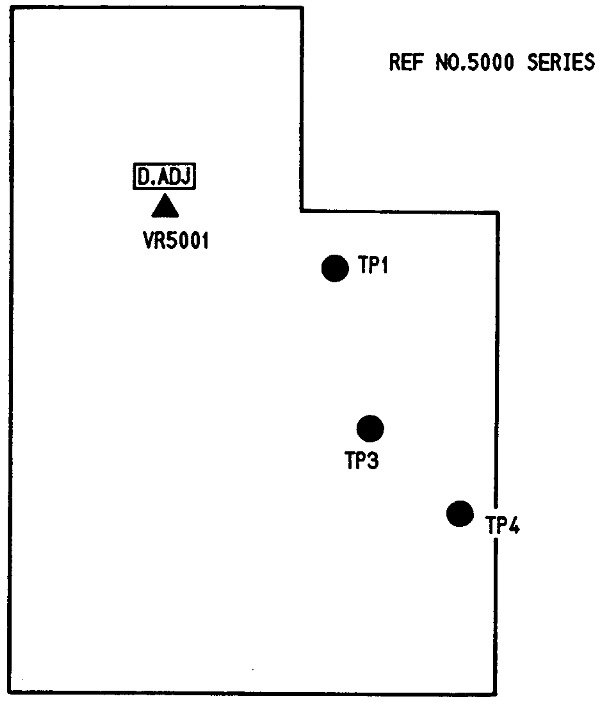
AUDIO —— COMPONENT SIDE ——


BIASOSC
C4020
TP4002
TP4003
AUDIO V.V LEVEL
VR4001
TPGND
TP4001

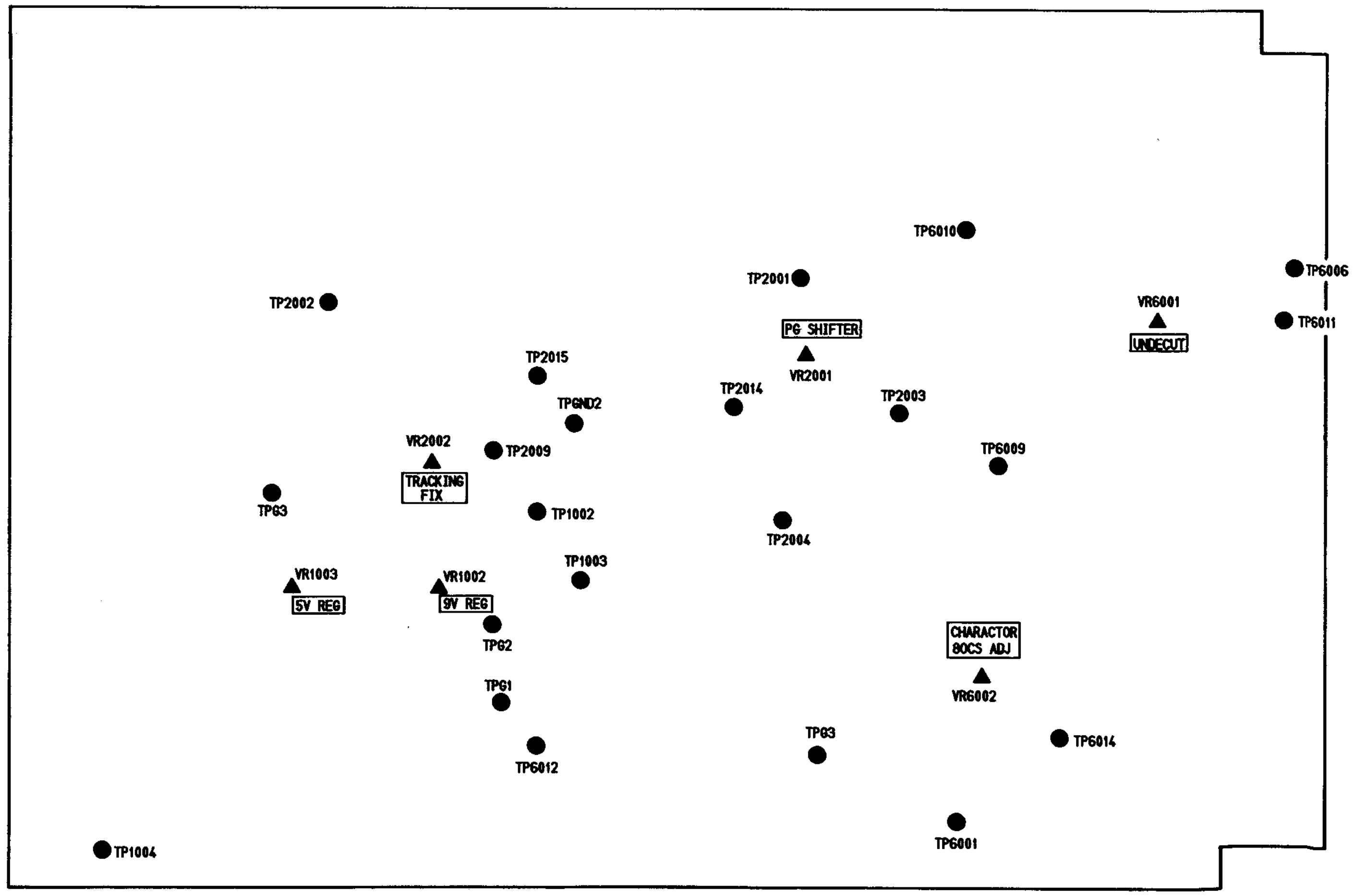
LUMINANCE & CHROMINANCE —— COMPONENT SIDE ——


TP8001
REC CURRENT
VR3001
TPGND
TP3005
TP3002

HEAD AMP —— COMPONENT SIDE ——

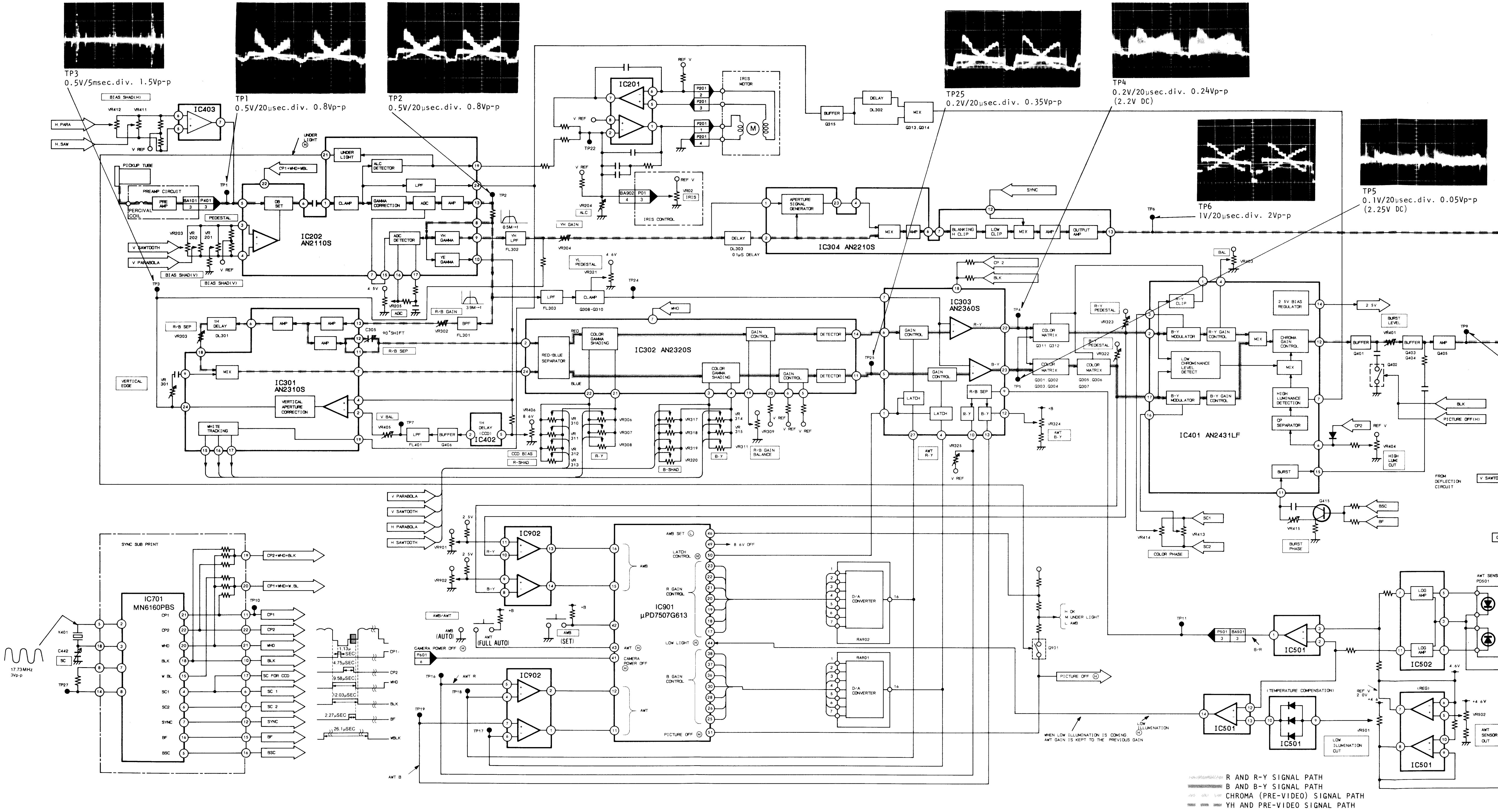

REF NO.5000 SERIES
D.ADJ
VR5001
TP1
TP3
TP4

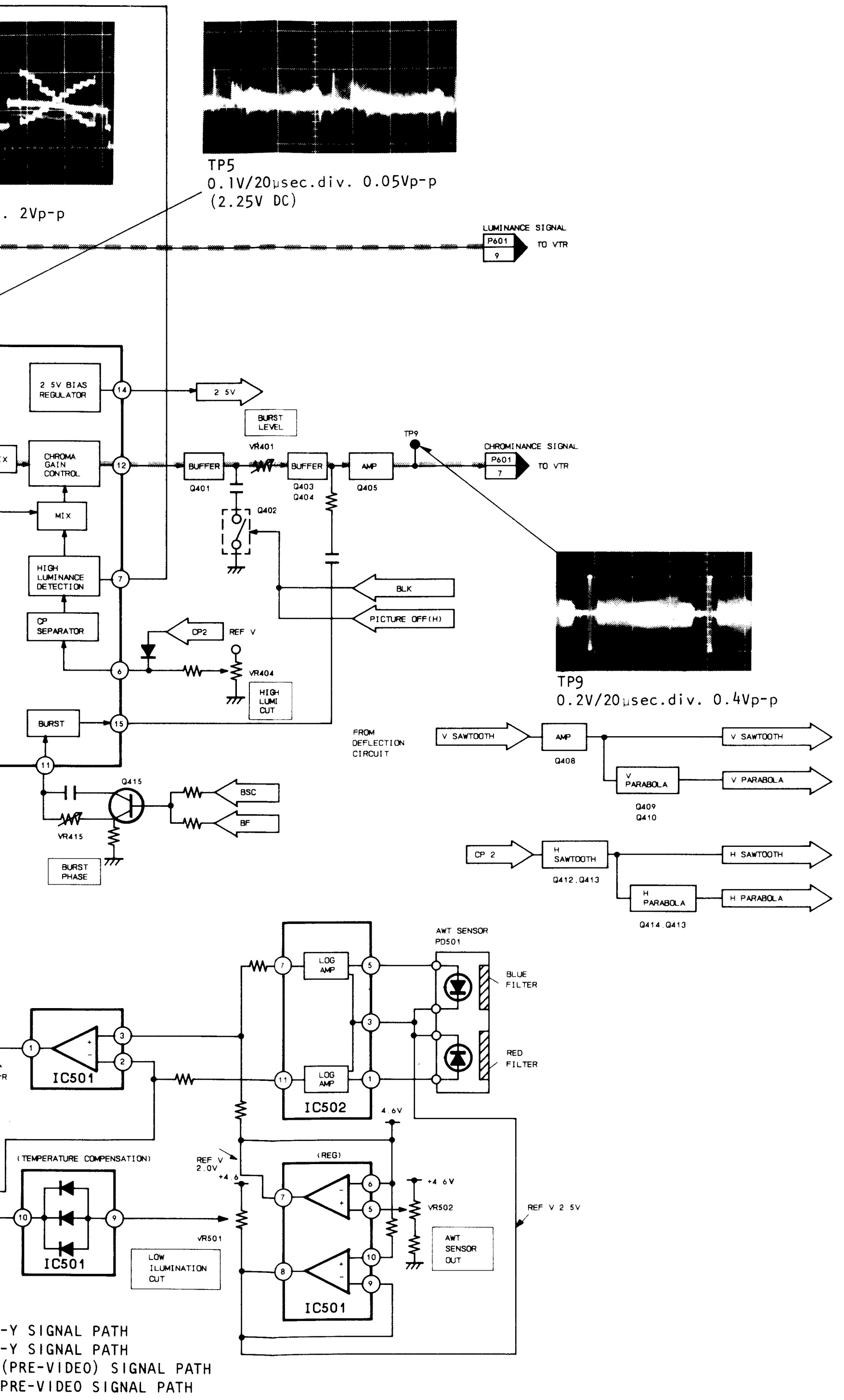
MAIN —— COMPONENT SIDE ——


TP6010
TP2001
TP6006
TP2002
VR6001
TP6011
PG SHIFTER
UNDECUT
VR2001
TP2015
TP2014
TP2003
TPGND2
VR2002
TP2009
TRACKING FIX
TP6009
TPG3
TP1002
TP2004
TP1003
VR1003
VR1002
5V REG
9V REG
TPG2
CHARACTOR 80CS ADJ
TPG1
VR6002
TPG3
TP6014
TP6012
TP6001
TP1004

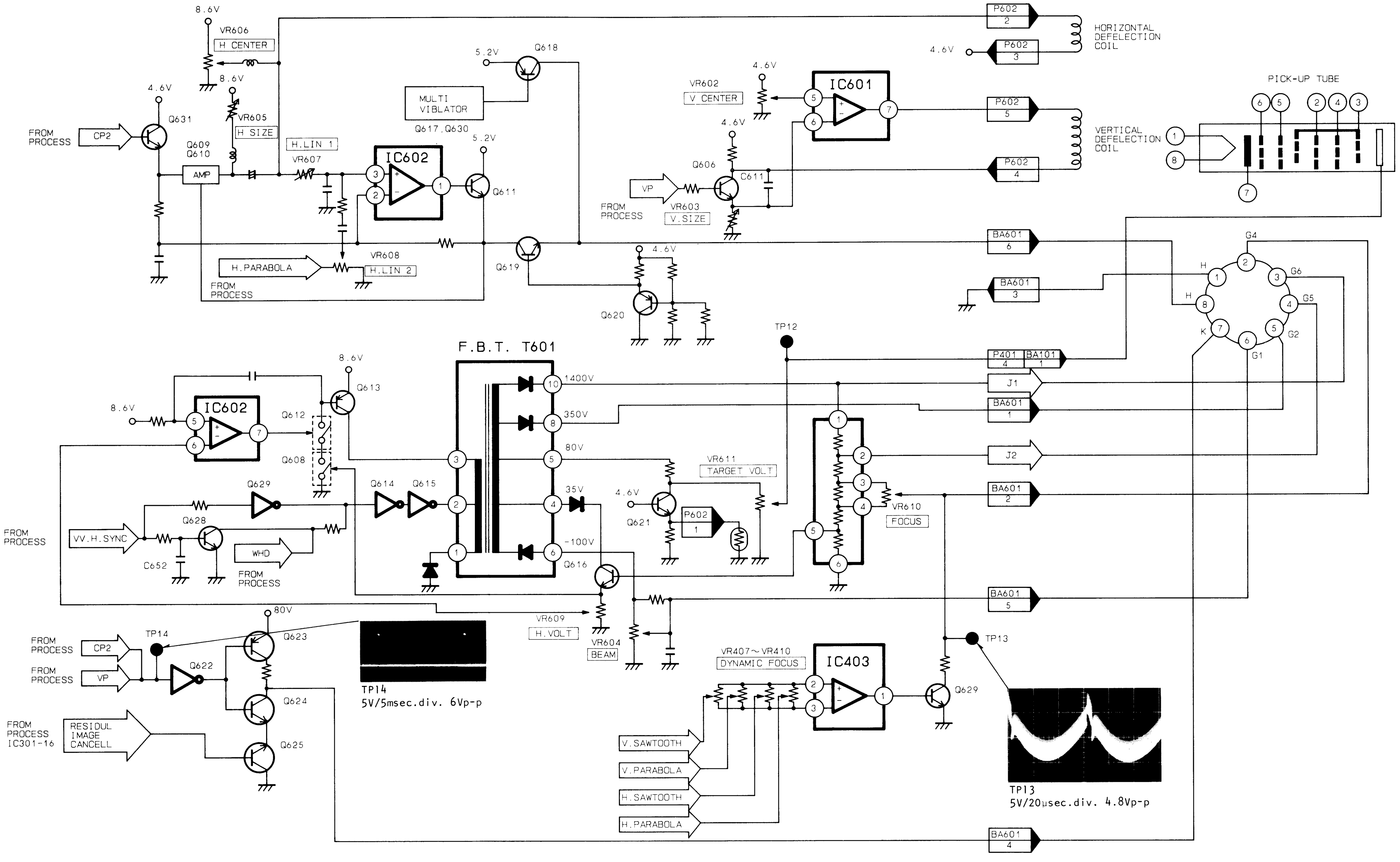
SECTION 3
BLOCK DIAGRAM & SCHEMATIC DIAGRAM

3-1. CAMERA PROCESS BLOCK DIAGRAM

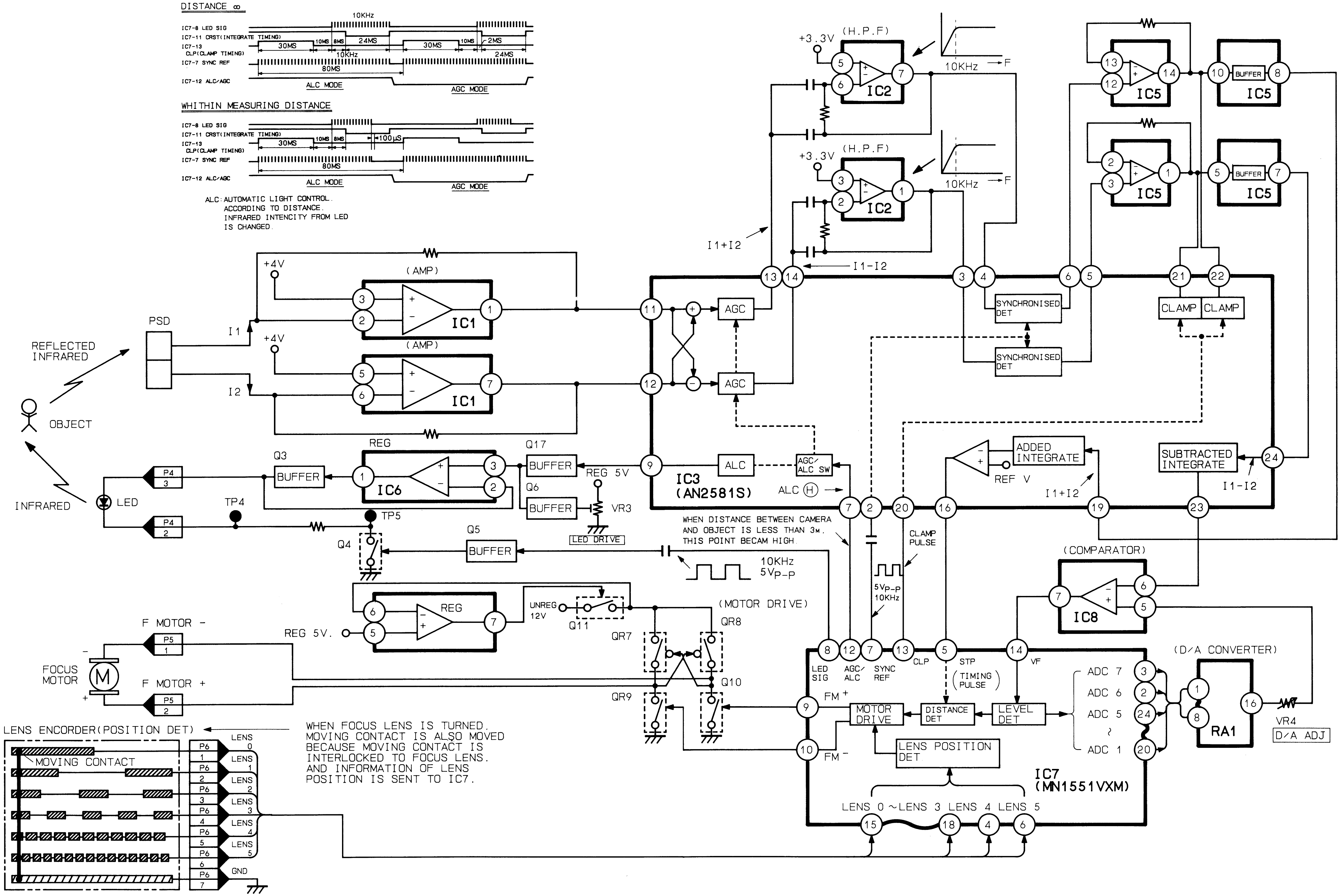

TP3
0.5V/5msec.div. 1.5Vp-p
TP1
0.5V/20μsec.div. 0.8Vp-p
TP2
0.5V/20μsec.div. 0.8Vp-p
TP25
0.2V/20μsec.div. 0.35Vp-p
TP4
0.2V/20μsec.div. 0.24Vp-p
(2.2V DC)
TP6
1V/20μsec.div. 2Vp-p
TP5
0.1V/20μsec.div. 0.05Vp-p
(2.25V DC)
BIAS SHAD(H)
H.PARA
H.SAW
IC403
PICKUP TUBE
PREAMP CIRCUIT
PRE AMP
PERCIVAL COIL
PEDESTAL
OB SET
CLAMP
GAMMA CORRECTION
AGC
AMP
UNDER LIGHT
ALC DETECTOR
LPF
ABC DETECTOR
YH GAMMA
YE GAMMA
IC202
AN2110S
V SAWTOOTH
V PARABOLA
BIAS SHAD(V)
IC201
IRIS MOTOR
IRIS CONTROL
REF V
TP22
YH GAIN
YH LPF
FL302
BUFFER
Q315
DELAY
DL302
MIX
Q313,Q314
APERTURE SIGNAL GENERATOR
DL303
0.1μS DELAY
IC304 AN2210S
BLANKING H CLIP
LOW CLIP
OUTPUT AMP
SYNC
R/B SEP
1H DELAY
DL301
90°SHIFT
C305
VERTICAL EDGE
IC301
AN2310S
VERTICAL APERTURE CORRECTION
WHITE TRACKING
V BAL
FL401
Q406
1H DELAY (CCD)
IC402
CCD BIAS
R-SHAD
B-SHAD
LPF
FL303
CLAMP
Q308-Q310
YL PEDESTAL
VR321
TP24
WHD
R/B GAIN
BPF
FL301
RED-BLUE SEPARATOR
COLOR GAMMA SHADING
IC302 AN2320S
GAIN CONTROL
DETECTOR
R/B GAIN BALANCE
IC303
AN2360S
R-Y
B-Y
LATCH
AWT R-Y
AWT B-Y
COLOR MATRIX
Q301 Q302
Q303 Q304
Q305 Q306
Q307
Q311 Q312
R-Y PEDESTAL
B-Y PEDESTAL
CP 2
BLK
BAL
R-Y CLIP
B-Y MODULATOR
R-Y GAIN CONTROL
B-Y GAIN CONTROL
LOW CHROMINANCE LEVEL DETECT
HIGH LUMINANCE DETECTION
CP SEPARATOR
BURST
IC401 AN2431LF
2.5V BIAS REGULATOR
CHROMA GAIN CONTROL
BURST LEVEL
Q401
Q402
Q403 Q404
Q405
PICTURE OFF(H)
HIGH LUMI CUT
FROM DEFLECTION CIRCUIT
V SAWTO
BSC
BF
Q415
BURST PHASE
SC1
SC2
COLOR PHASE
SYNC SUB PRINT
IC701
MN6160PBS
CP1
CP2
WHD
BLK
W.BL
SC1
SC2
SYNC
BF
BSC
CP2+WHD+BLK
CP1+WHD+W.BL
SC FOR CCD
X401
C442
17.73MHz
3Vp-p
TP27
TP10
13μSEC
4.75μSEC
9.58μSEC
12.03μSEC
2.27μSEC
26.1μSEC
V PARABOLA
V SAWTOOTH
H PARABOLA
H SAWTOOTH
IC902
IC901
μPD7507G613
AWB SET
8.6V OFF
LATCH CONTROL
R GAIN CONTROL
B GAIN CONTROL
LOW LIGHT
CAMERA POWER OFF
PICTURE OFF
AWB
AWT
AWB-AWT
(AUTO)
(FULL AUTO)
(SET)
D/A CONVERTER
RA902
RA901
H OK
M UNDER LIGHT
L AWB
Q901
PICTURE OFF
WHEN LOW ILLUMINATION IS COMING AWT GAIN IS KEPT TO THE PREVIOUS GAIN
LOW ILLUMINATION
TP11
IC501
IC502
LOG AMP
AWT SENS
PD501
(TEMPERATURE COMPENSATION)
(REG)
LOW ILLUMINATION CUT
AWT SENSOR CUT
TP16
TP17
TP18
TP19
AWT R
AWT B
R AND R-Y SIGNAL PATH
B AND B-Y SIGNAL PATH
CHROMA (PRE-VIDEO) SIGNAL PATH
YH AND PRE-VIDEO SIGNAL PATH


TP5
0.1V/20μsec.div. 0.05Vp-p
(2.25V DC)
. 2Vp-p
LUMINANCE SIGNAL
P601 9
TO VTR
2.5V BIAS REGULATOR
2.5V
BURST LEVEL
VR401
CHROMA GAIN CONTROL
BUFFER
Q401
BUFFER
Q403 Q404
AMP
Q405
Q402
TP9
CHROMINANCE SIGNAL
P601 7
TO VTR
MIX
HIGH LUMINANCE DETECTION
BLK
PICTURE OFF(H)
CP SEPARATOR
CP2
REF V
VR404
HIGH LUMI CUT
TP9
0.2V/20μsec.div. 0.4Vp-p
BURST
FROM DEFLECTION CIRCUIT
V SAWTOOTH
AMP
Q408
V SAWTOOTH
V PARABOLA
Q409 Q410
V PARABOLA
Q415
VR415
BSC
BF
BURST PHASE
CP 2
H SAWTOOTH
Q412 Q413
H SAWTOOTH
H PARABOLA
Q414 Q413
H PARABOLA
AWT SENSOR PD501
LOG AMP
BLUE FILTER
RED FILTER
IC501
IC502
4.6V
(TEMPERATURE COMPENSATION)
REF V 2.0V
(REG)
+4.6V
VR502
AWT SENSOR OUT
REF V 2.5V
VR501
LOW ILLUMINATION OUT
IC501
IC501
-Y SIGNAL PATH
-Y SIGNAL PATH
(PRE-VIDEO) SIGNAL PATH
PRE-VIDEO SIGNAL PATH

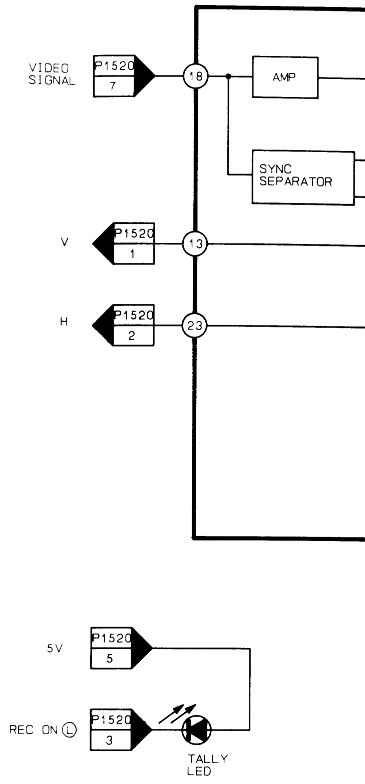
3-2. CAMERA DEFLECTION BLOCK DIAGRAM


8.6V
VR606
H CENTER
8.6V
VR605
H SIZE
4.6V
Q631
FROM PROCESS
CP2
Q609
Q610
AMP
H.LIN 1
VR607
IC602
5.2V
Q618
MULTI VIBLATOR
Q617,Q630
5.2V
Q611
H.PARABOLA
FROM PROCESS
VR608
H.LIN 2
Q619
P602 2
HORIZONTAL DEFELECTION COIL
4.6V
P602 3
VR602
V CENTER
4.6V
IC601
4.6V
Q606
C611
VP
FROM PROCESS
VR603
V.SIZE
P602 5
VERTICAL DEFELECTION COIL
P602 4
PICK-UP TUBE
4.6V
Q620
BA601 6
BA601 3
G4
H
H
G6
G5
G2
K
G1
TP12
F.B.T. T601
8.6V
Q613
8.6V
IC602
Q612
Q608
1400V
350V
80V
35V
-100V
P401 4
BA101 1
J1
BA601 1
J2
BA601 2
VR611
TARGET VOLT
4.6V
Q621
P602 1
VR610
FOCUS
Q616
Q629
Q614
Q615
FROM PROCESS
VV.H.SYNC
Q628
C652
WHD
FROM PROCESS
VR609
H.VOLT
VR604
BEAM
BA601 5
80V
TP14
Q623
FROM PROCESS
CP2
FROM PROCESS
VP
Q622
TP14
5V/5msec.div. 6Vp-p
Q624
FROM PROCESS IC301-16
RESIDUL IMAGE CANCELL
Q625
VR407~VR410
DYNAMIC FOCUS
IC403
Q629
TP13
V.SAWTOOTH
V.PARABOLA
H.SAWTOOTH
H.PARABOLA
TP13
5V/20μsec.div. 4.8Vp-p
BA601 4

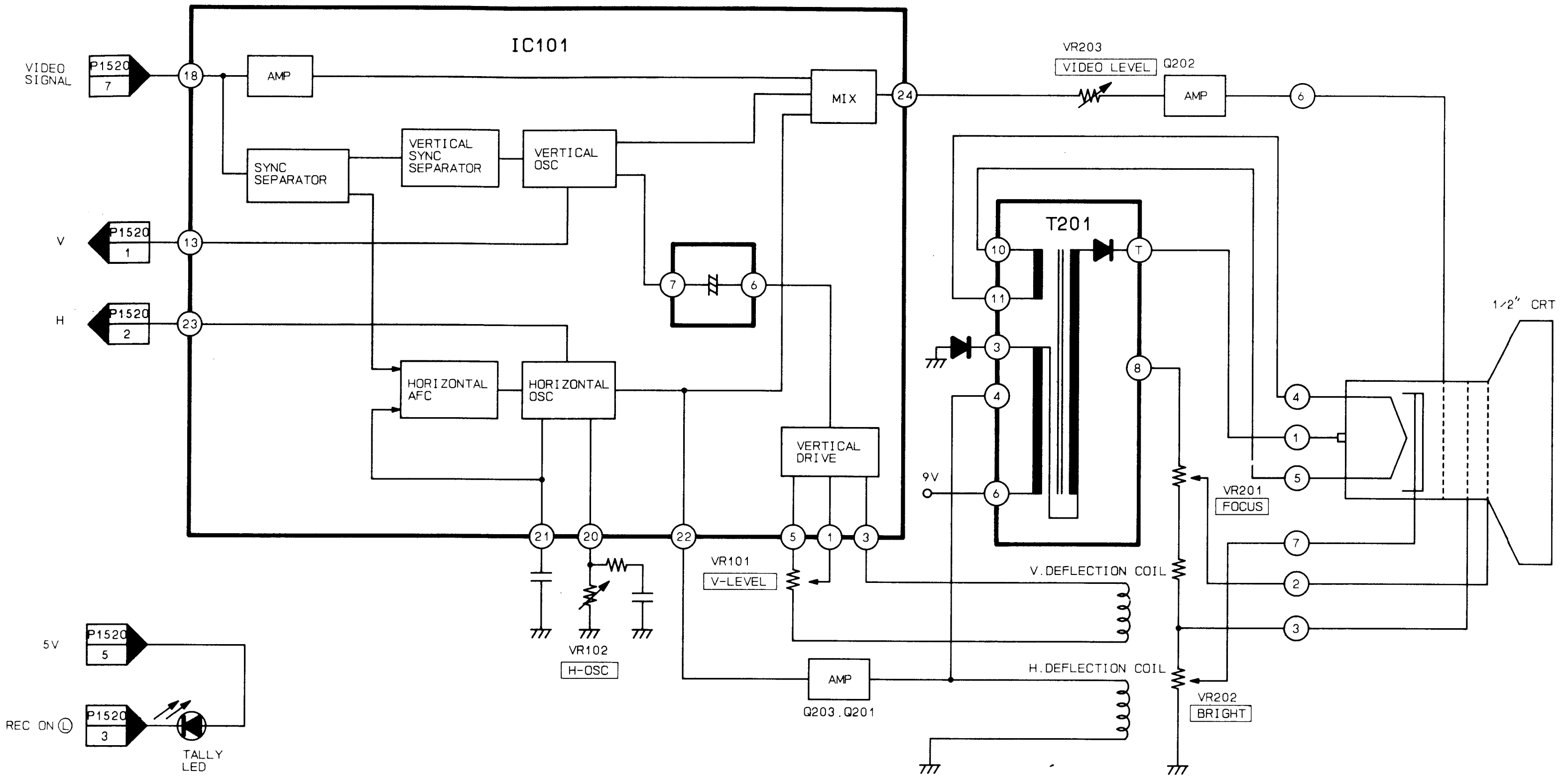
3-3. AUTO FOCUS BLOCK DIAGRAM


DISTANCE ∞
10KHz
IC7-8 LED SIG
IC7-11 CRST(INTEGRATE TIMING)
IC7-13 CLP(CLAMP TIMING)
IC7-7 SYNC REF
IC7-12 ALC/AGC
30MS
10MS
8MS
24MS
2MS
80MS
ALC MODE
AGC MODE
WHITHIN MEASURING DISTANCE
100μS
ALC: AUTOMATIC LIGHT CONTROL. ACCORDING TO DISTANCE. INFRARED INTENCITY FROM LED IS CHANGED.
REFLECTED INFRARED
PSD
I1
I2
+4V
(AMP)
IC1
OBJECT
INFRARED
LED
P4
TP4
TP5
Q3
BUFFER
REG
IC6
Q17
Q6
REG 5V
VR3
LED DRIVE
Q4
Q5
10KHz 5Vp-p
UNREG 12V
Q11
(MOTOR DRIVE)
QR7
QR8
QR9
Q10
REG 5V.
F MOTOR -
F MOTOR +
P5
FOCUS MOTOR
M
LENS ENCORDER(POSITION DET)
MOVING CONTACT
P6
LENS 0
LENS 1
LENS 2
LENS 3
LENS 4
LENS 5
GND
WHEN FOCUS LENS IS TURNED, MOVING CONTACT IS ALSO MOVED BECAUSE MOVING CONTACT IS INTERLOCKED TO FOCUS LENS. AND INFORMATION OF LENS POSITION IS SENT TO IC7.
AGC
ALC
AGC/ALC SW
IC3 (AN2581S)
ALC (H)
I1+I2
I1-I2
+3.3V
(H.P.F)
IC2
10KHz
F
IC5
BUFFER
SYNCHRONISED DET
CLAMP
ADDED INTEGRATE
REF V
SUBTRACTED INTEGRATE
WHEN DISTANCE BETWEEN CAMERA AND OBJECT IS LESS THAN 3M. THIS POINT BECAM HIGH.
CLAMP PULSE
5Vp-p 10KHz
(COMPARATOR)
IC8
LED SIG
AGC/ALC
SYNC REF
CLP
STP
(TIMING PULSE)
VF
FM+
FM-
MOTOR DRIVE
DISTANCE DET
LEVEL DET
LENS POSITION DET
ADC 7
ADC 6
ADC 5
ADC 1
(D/A CONVERTER)
RA1
VR4
D/A ADJ
IC7 (MN1551VXM)
LENS 0 ~ LENS 3 LENS 4 LENS 5

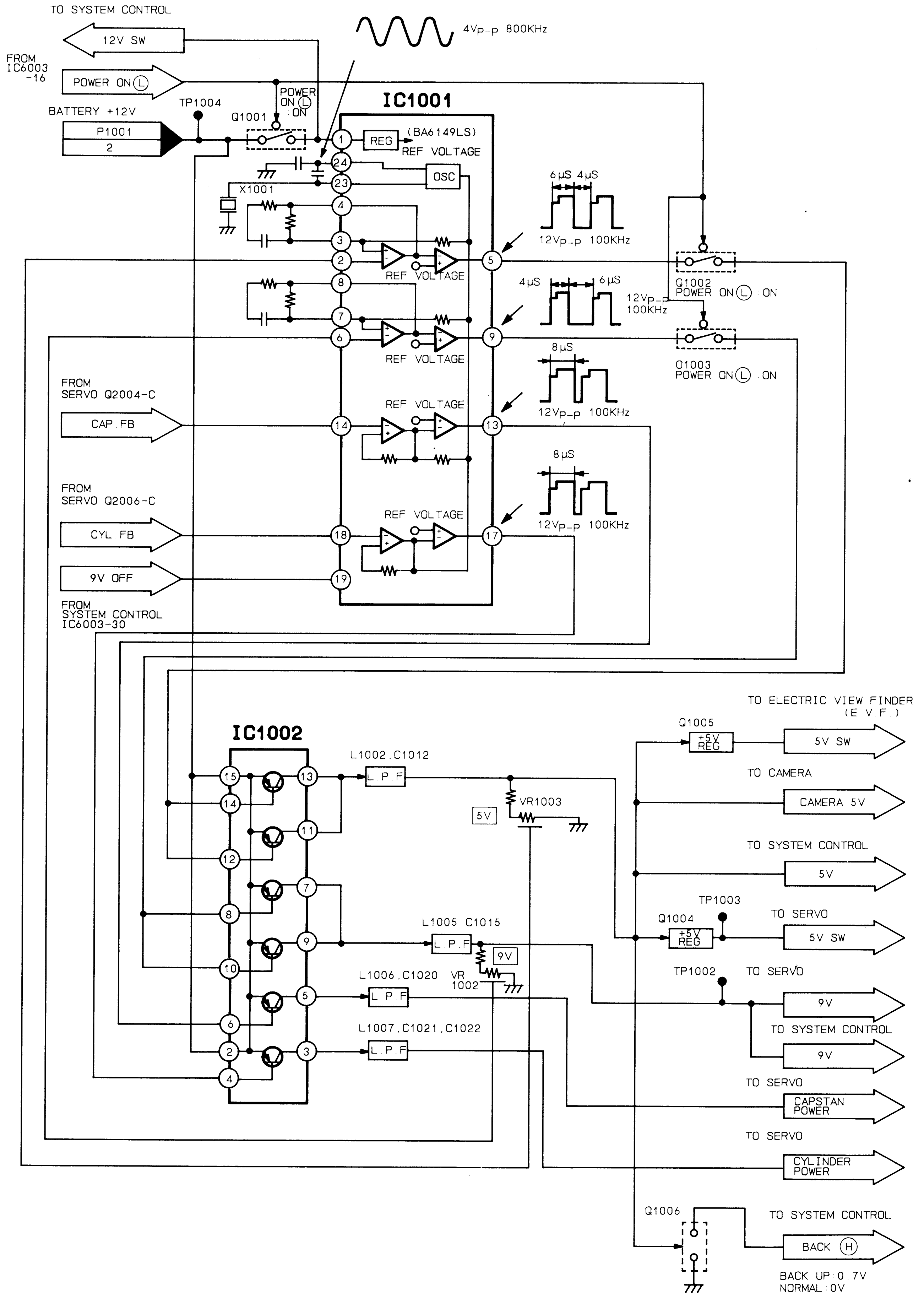
3-4. ELECTRONIC


VIDEO SIGNAL
P1520
AMP
SYNC SEPARATOR
V
H
5V
REC ON
TALLY LED

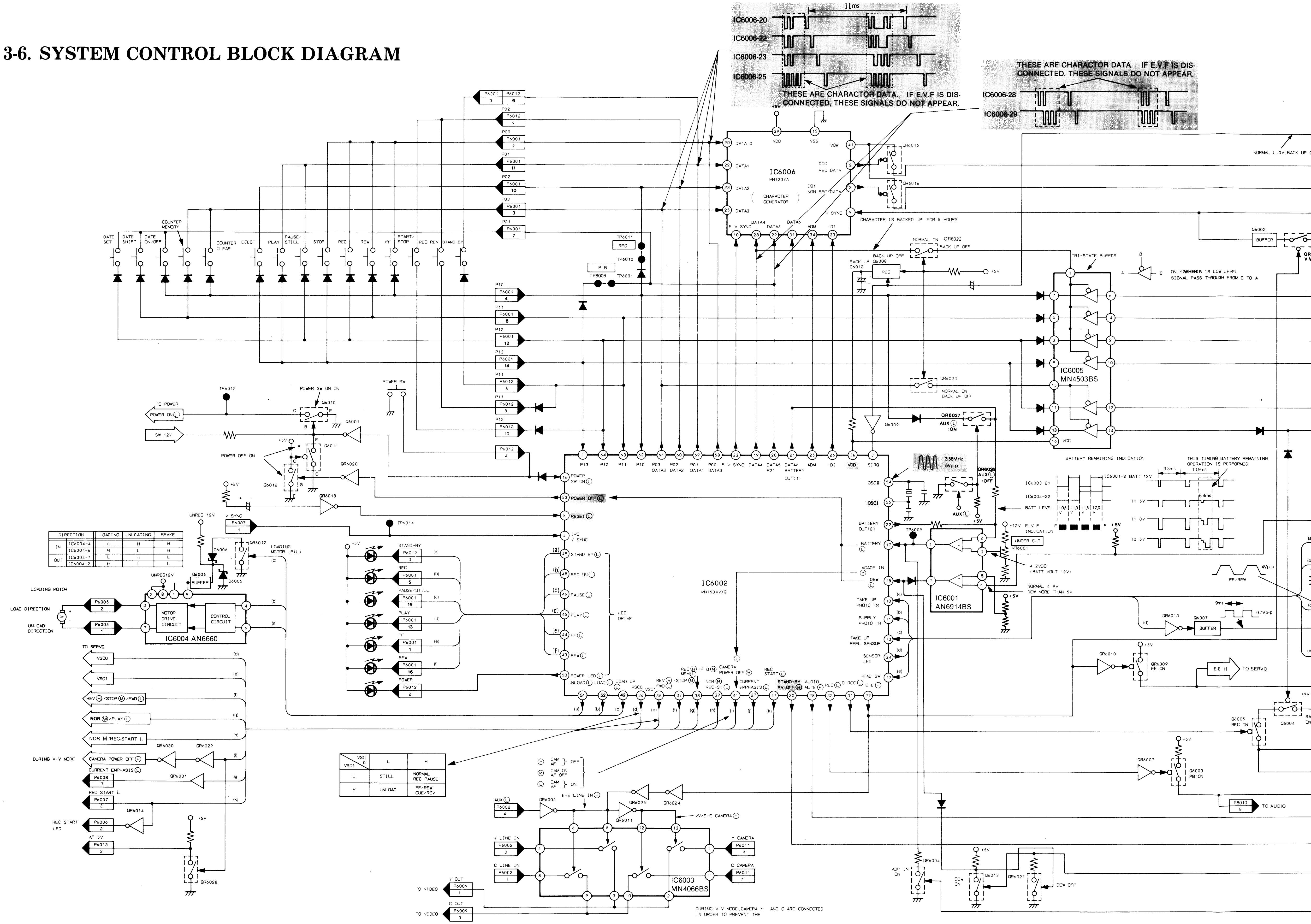
3-4. ELECTRONIC VIEW FINDER (E.V.F) BLOCK DIAGRAM


IC101
VIDEO SIGNAL
P1520 7
V
P1520 1
H
P1520 2
AMP
MIX
SYNC SEPARATOR
VERTICAL SYNC SEPARATOR
VERTICAL OSC
HORIZONTAL AFC
HORIZONTAL OSC
VERTICAL DRIVE
18
24
13
23
7
6
21
20
22
5
1
3
VR101
V-LEVEL
VR102
H-OSC
AMP
Q203.Q201
5V
P1520 5
REC ON Ⓛ
P1520 3
TALLY LED
VR203
VIDEO LEVEL
Q202
AMP
T201
10
11
3
4
6
T
8
9V
VR201
FOCUS
VR202
BRIGHT
V.DEFLECTION COIL
H.DEFLECTION COIL
1/2" CRT
4
1
5
7
2
3

3-5. POWER SUPPLY BLOCK DIAGRAM


TO SYSTEM CONTROL
12V SW
FROM IC6003 -16
POWER ON Ⓛ
BATTERY +12V
P1001 2
TP1004
Q1001
POWER ON Ⓛ : ON
4Vp-p 800KHz
IC1001
(BA6149LS)
REG
REF VOLTAGE
OSC
X1001
REF VOLTAGE
REF VOLTAGE
REF VOLTAGE
REF VOLTAGE
6μS 4μS
12Vp-p 100KHz
4μS 6μS
12Vp-p 100KHz
8μS
12Vp-p 100KHz
8μS
12Vp-p 100KHz
Q1002
POWER ON Ⓛ : ON
Q1003
POWER ON Ⓛ : ON
FROM SERVO Q2004-C
CAP FB
FROM SERVO Q2006-C
CYL FB
9V OFF
FROM SYSTEM CONTROL IC6003-30
IC1002
L1002.C1012
L P F
VR1003
5V
L1005 C1015
L P F
9V
L1006.C1020
VR 1002
L P F
L1007.C1021.C1022
L P F
TO ELECTRIC VIEW FINDER (E.V.F.)
Q1005
+5V REG
5V SW
TO CAMERA
CAMERA 5V
TO SYSTEM CONTROL
5V
TP1003
Q1004
+5V REG
TO SERVO
5V SW
TP1002
TO SERVO
9V
TO SYSTEM CONTROL
9V
TO SERVO
CAPSTAN POWER
TO SERVO
CYLINDER POWER
Q1006
TO SYSTEM CONTROL
BACK Ⓗ
BACK UP : 0.7V
NORMAL : 0V

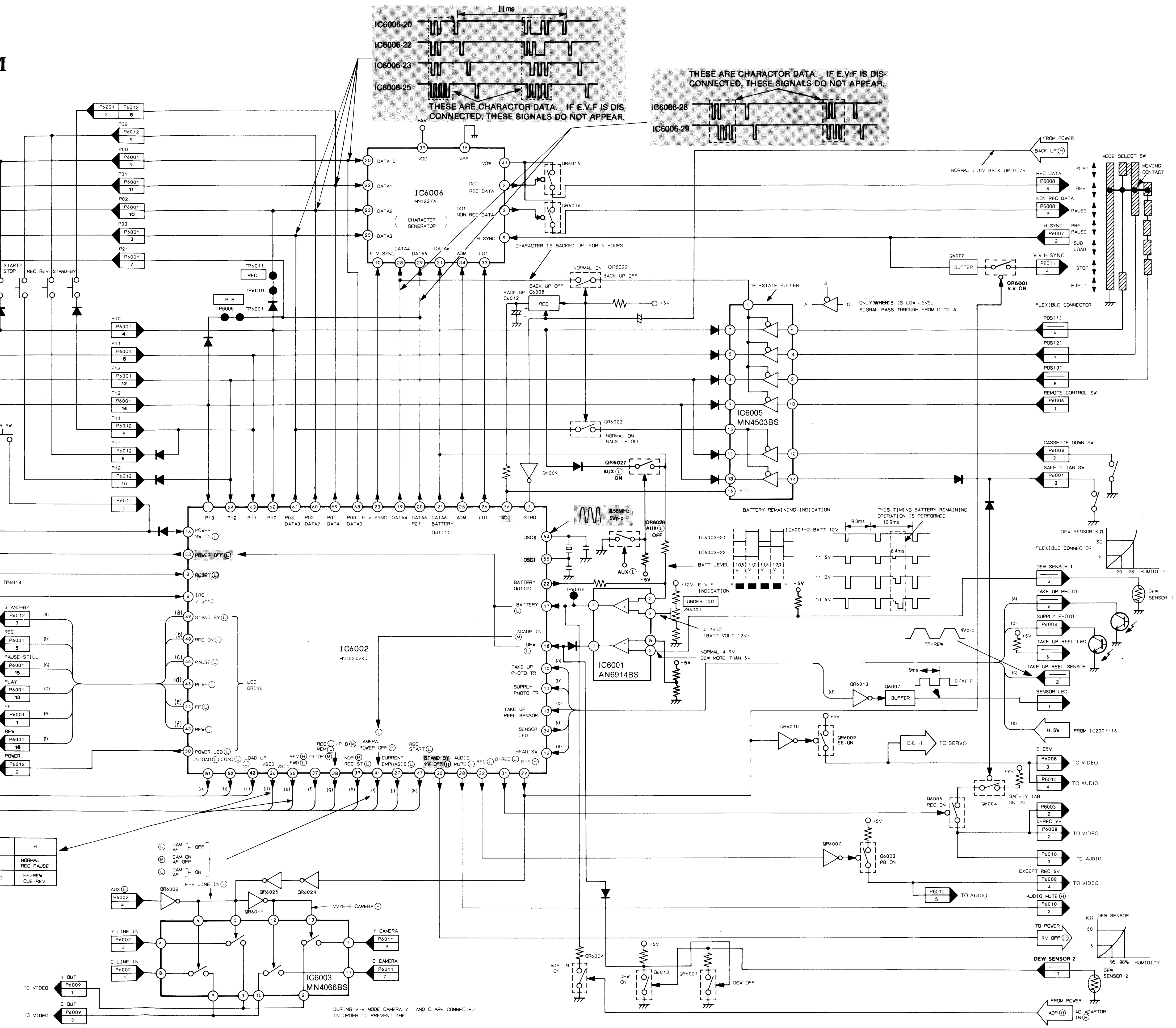
3-6. SYSTEM CONTROL BLOCK DIAGRAM


IC6006-20
IC6006-22
IC6006-23
IC6006-25
11ms
THESE ARE CHARACTOR DATA. IF E.V.F IS DISCONNECTED, THESE SIGNALS DO NOT APPEAR.
IC6006-28
IC6006-29
IC6006 MN1237A (CHARACTER GENERATOR)
DATA 0
DATA1
DATA2
DATA3
DATA4
DATA5
DATA6
VDD
VSS
VDW
DOO REC DATA
DO1 NON REC DATA
H SYNC
F. V. SYNC
ADM
LD1
QR6015
QR6016
CHARACTER IS BACKED UP FOR 5 HOURS
NORMAL ON QR6022 BACK UP OFF
BACK UP OFF
BACK UP Q6008
C6012
REG
TRI-STATE BUFFER
ONLY WHEN B IS LOW LEVEL SIGNAL PASS THROUGH FROM C TO A
IC6005 MN4503BS
QR6023 NORMAL ON BACK UP OFF
QR6027 AUX Ⓛ ON
Q6009
Q6002 BUFFER
NORMAL L 0V BACK UP
BATTERY REMAINING INDICATION
THIS TIMING BATTERY REMAINING OPERATION IS PERFORMED
COUNTER MEMORY
DATE SET
DATE SHIFT
DATE ON/OFF
COUNTER CLEAR
EJECT
PLAY
PAUSE/STILL
STOP
REC
REW
FF
START/STOP
REC REV
STAND-BY
TP6011 REC
TP6010 P.B
TP6006
TP6001
TP6012
TO POWER
POWER ON Ⓛ
SW 12V
POWER SW ON ON
Q6010
Q6001
Q6011
QR6020
POWER OFF ON
Q6012
QR6018
POWER SW
IC6002 MN1534VXQ
POWER SW ON Ⓛ
POWER OFF Ⓛ
RESET Ⓛ
IRQ V SYNC
STAND BY Ⓛ
REC ON Ⓛ
PAUSE Ⓛ
PLAY Ⓛ
FF Ⓛ
REW Ⓛ
POWER LED Ⓛ
LED DRIVE
TP6014
UNREG 12V
V-SYNC
QR6012
LOADING MOTOR UP (L)
Q6006 BUFFER
D6005
LOADING MOTOR
LOAD DIRECTION
UNLOAD DIRECTION
MOTOR DRIVE CIRCUIT
CONTROL CIRCUIT
IC6004 AN6660
TO SERVO
VSC0
VSC1
REV Ⓗ/STOP Ⓜ/FWD Ⓛ
NOR Ⓜ/PLAY Ⓛ
NOR M/REC START L
QR6030
QR6029
DURING V-V MODE
CAMERA POWER OFF Ⓗ
CURRENT EMPHASIS Ⓛ
QR6031
REC START L
QR6014
REC START LED
AF 5V
QR6028
STAND-BY
PAUSE/STILL
POWER
OSC2
OSC1
3.58MHz 5Vp-p
QR6026 AUX Ⓛ OFF
BATTERY OUT (2)
BATTERY Ⓛ
ACADP IN Ⓜ
DEW Ⓛ
TAKE UP PHOTO TR
SUPPLY PHOTO TR
TAKE UP REEL SENSOR
SENSOR LED
HEAD SW
IC6001 AN6914BS
+12V E.V.F INDICATION
UNDER CUT VR6001
4.2VDC (BATT VOLT 12V)
NORMAL 4.9V DEW MORE THAN 5V
BATT LEVEL
IC6003-21
IC6003-22
IC6001-2 BATT 12V
11.5V
11.0V
10.5V
9.3ms
6.4ms
FF/REW
4Vp-p
9ms
0.7Vp-p
QR6013
Q6007 BUFFER
QR6010
QR6009 EE ON
E-E H
TO SERVO
Q6005 REC ON
Q6004
QR6007
Q6003 PB ON
P6010
TO AUDIO
QR6004
ADP IN ON
Q6013
DEW ON
QR6021
DEW OFF
CAM AF OFF
CAM ON AF OFF
CAM AF ON
AUX Ⓛ
QR6002
E-E LINE IN Ⓗ
QR6025
QR6024
QR6011
VV/E-E CAMERA Ⓗ
Y LINE IN
C LINE IN
Y CAMERA
C CAMERA
IC6003 MN4066BS
Y OUT
C OUT
TO VIDEO
DURING V-V MODE, CAMERA Y AND C ARE CONNECTED IN ORDER TO PREVENT THE

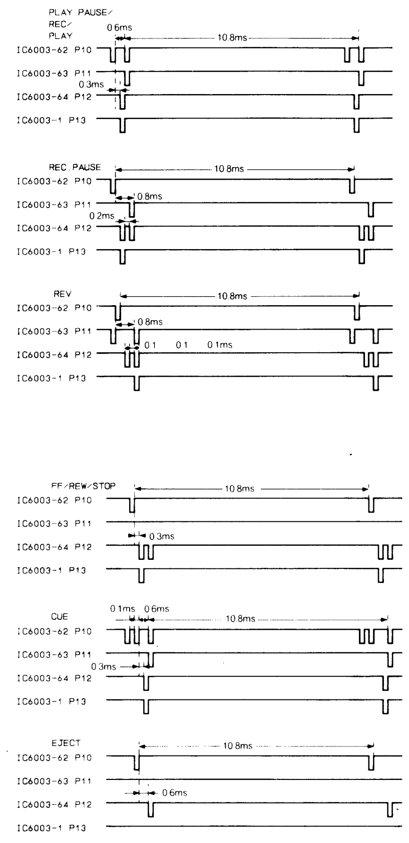
DIRECTION		LOADING	UNLOADING	BRAKE
IN	IC6004-4	L	H	H
	IC6004-6	H	L	H
OUT	IC6004-7	L	H	L
	IC6004-2	H	L	L

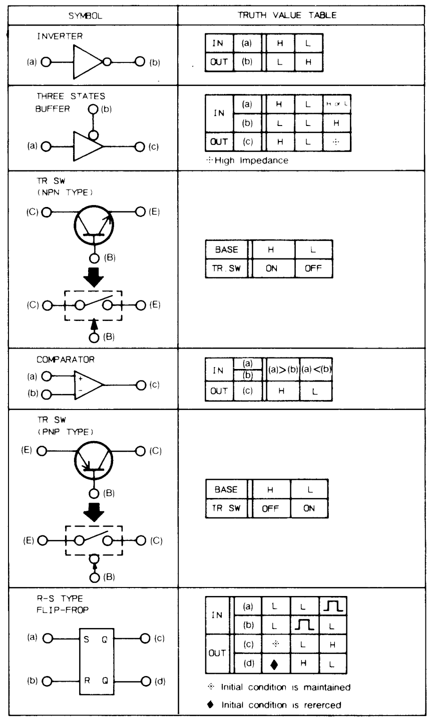
VSC1 \ VSC0	L	H
L	STILL	NORMAL REC PAUSE
H	UNLOAD	FF/REW CUE/REV

IF THE VIDEO TAPE RECORDER DOSEN'T WORK IN ANY MODES, CHECK THE PARTS MARKED ▨ IN THE ILLUSTRATION.


11ms
IC6006-20
IC6006-22
IC6006-23
IC6006-25
THESE ARE CHARACTOR DATA. IF E.V.F IS DISCONNECTED, THESE SIGNALS DO NOT APPEAR.
IC6006-28
IC6006-29
IC6006
MN1237A
CHARACTER GENERATOR
DATA 0
DATA1
DATA2
DATA3
VDD
VSS
VOW
DO0 REC DATA
DO1 NON REC DATA
H. SYNC
F. V. SYNC
DATA4
DATA5
DATA6
ADM
LD1
QR6015
QR6016
CHARACTER IS BACKED UP FOR 5 HOURS
QR6022
NORMAL ON
BACK UP OFF
Q6008
REG
C6012
QR6023
QR6027
AUX Ⓛ ON
QR6026
Q6009
3.58MHz 5Vp-p
IC6005
MN4503BS
TRI-STATE BUFFER
ONLY WHEN B IS LOW LEVEL SIGNAL PASS THROUGH FROM C TO A
FROM POWER
BACK UP Ⓗ
NORMAL L:0V BACK UP 0.7V
MODE SELECT SW
MOVING CONTACT
PLAY
REV
PAUSE
PRE PAUSE
SUB LOAD
STOP
EJECT
REC DATA
NON REC DATA
H SYNC
V.V.H SYNC
Q6002
BUFFER
QR6001
V.V:ON
FLEXIBLE CONNECTOR
POS(1)
POS(2)
POS(3)
REMOTE CONTROL SW
CASSETTE DOWN SW
SAFETY TAB SW
BATTERY REMAINING INDICATION
THIS TIMING BATTERY REMAINING OPERATION IS PERFORMED
IC6003-21
IC6003-22
BATT LEVEL
IC6001-2 BATT 12V
11.5V
11.0V
10.5V
E.V.F INDICATION
UNDER CUT
VR6001
4.2VDC (BATT VOLT 12V)
NORMAL 4.9V DEW MORE THAN 5V
DEW SENSOR KΩ
HUMIDITY
DEW SENSOR 1
TAKE UP PHOTO
SUPPLY PHOTO
TAKE UP REEL LED
TAKE UP REEL SENSOR
SENSOR LED
FF/REW
4Vp-p
QR6013
Q6007
BUFFER
0.7Vp-p
H SW
FROM IC2007-16
IC6002
MN1534VXQ
IC6001
AN6914BS
POWER SW ON Ⓛ
POWER OFF Ⓛ
RESET Ⓛ
IRQ V SYNC
STAND BY Ⓛ
REC ON Ⓛ
PAUSE Ⓛ
PLAY Ⓛ
FF Ⓛ
REW Ⓛ
POWER LED Ⓛ
LED DRIVE
OSCI
OSCO
BATTERY OUT(2)
BATTERY Ⓛ
ACADP IN Ⓜ
DEW Ⓛ
TAKE UP PHOTO TR
SUPPLY PHOTO TR
TAKE UP REEL SENSOR
SENSOR LED
HEAD SW
E-E Ⓗ
D-REC Ⓛ
AUDIO MUTE Ⓗ
STAND-BY 9V OFF Ⓗ
CURRENT EMPHASIS Ⓛ
REC START Ⓛ
CAMERA POWER OFF Ⓗ
UNLOAD Ⓛ
LOAD Ⓛ
LOAD UP
VSCO
VSC1
QR6010
QR6009 EE ON
E-E H
TO SERVO
E-E5V
TO VIDEO
TO AUDIO
SAFETY TAB ON ON
Q6005 REC ON
Q6004
D-REC 9V
QR6007
Q6003 PB ON
EXCEPT REC 5V
AUDIO MUTE Ⓗ
TO POWER 9V OFF Ⓗ
DEW SENSOR 2
QR6004
ADP IN ON
Q6013
QR6021
DEW ON
DEW OFF
FROM POWER ADP Ⓗ
AC ADAPTOR IN Ⓗ
STAND-BY
REC
PAUSE/STILL
PLAY
FF
REW
POWER
START/STOP
REC REV
STAND-BY
TP6011 REC
TP6010
P.B TP6006
TP6001
TP6014
NORMAL, REC PAUSE
FF/REW CUE/REV
AUX Ⓛ
QR6002
QR6025
QR6024
QR6011
E-E LINE IN Ⓗ
VV-E-E CAMERA Ⓗ
Y LINE IN
C LINE IN
Y CAMERA
C CAMERA
Y OUT
C OUT
TO VIDEO
IC6003
MN4066BS
DURING V-V MODE CAMERA Y AND C ARE CONNECTED IN ORDER TO PREVENT THE

IF THE VIDEO TAPE RECORDER DOSEN'T WORK IN ANY MODES, CHECK THE PARTS MARKED IN THE ILLUSTRATION.

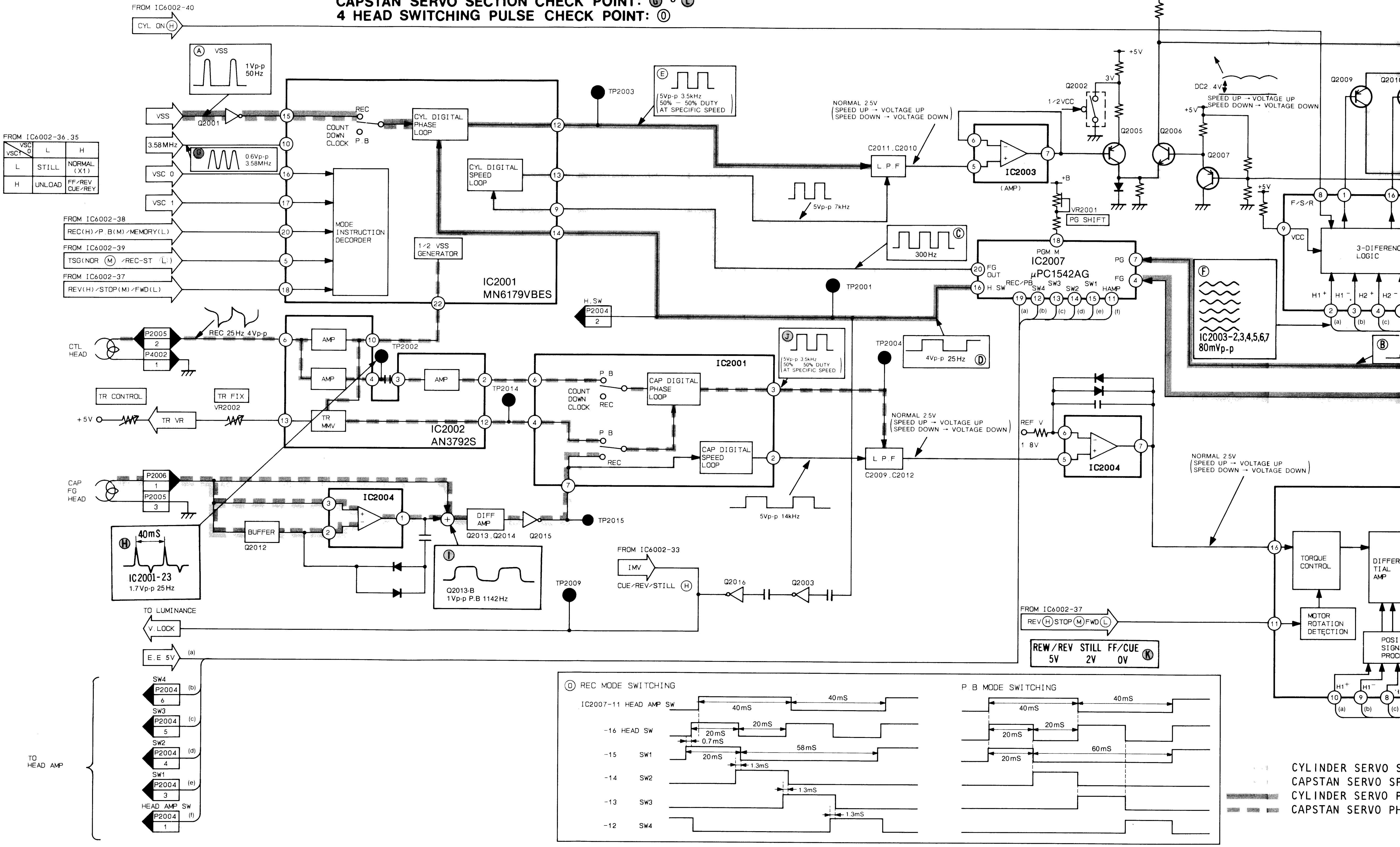



SYMBOL
TRUTH VALUE TABLE
INVERTER
THREE STATES BUFFER
*High impedance
TR SW (NPN TYPE)
BASE H L
TR SW ON OFF
COMPARATOR
(a)>(b) (a)<(b)
TR SW (PNP TYPE)
BASE H L
TR SW OFF ON
R-S TYPE FLIP-FROP
* Initial condition is maintained
◆ Initial condition is rererced

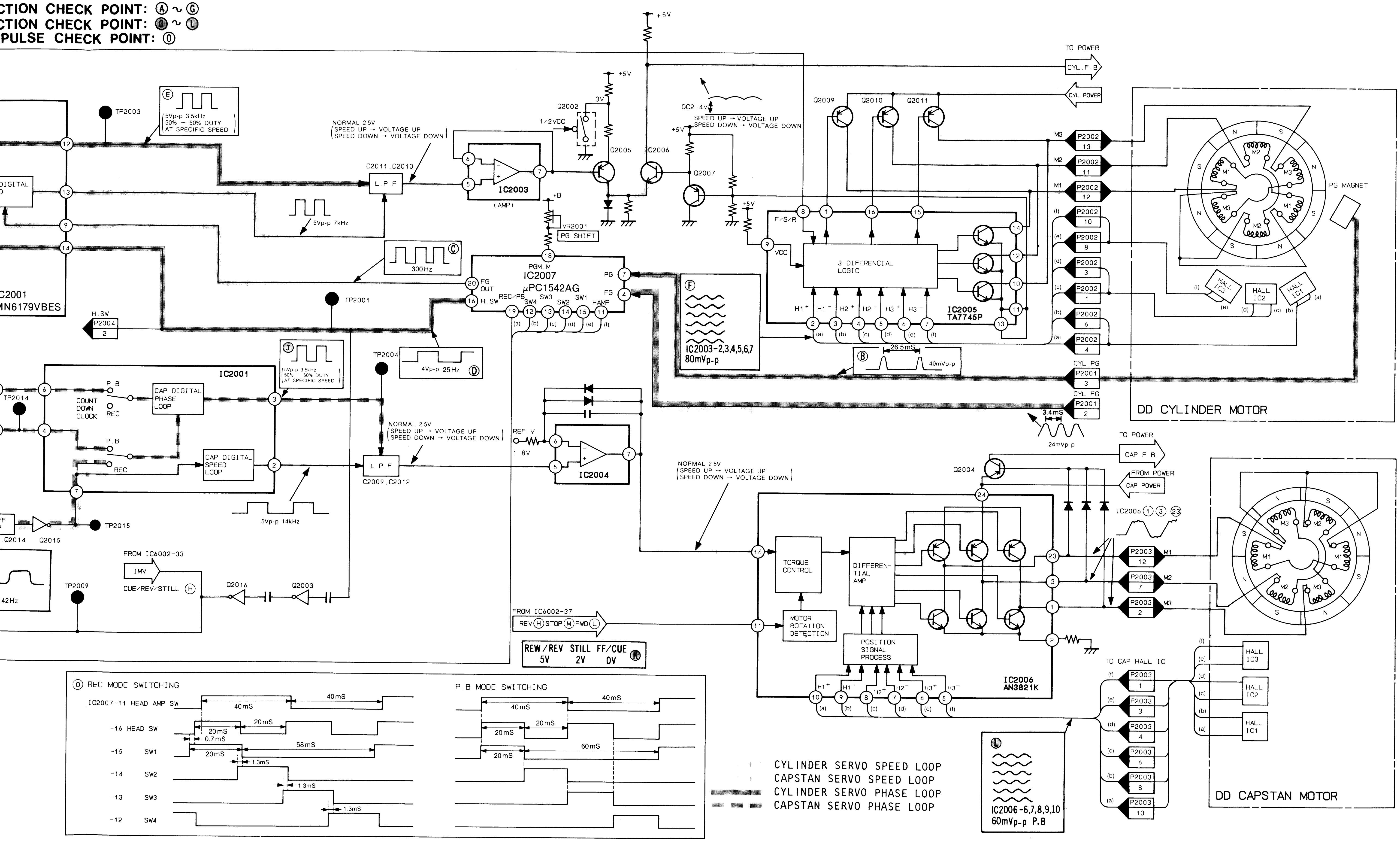
Next Page:
SERVO Section

3-7. SERVO BLOCK DIAGRAM

CYLINDER SERVO SECTION CHECK POINT: Ⓐ ~ Ⓖ
CAPSTAN SERVO SECTION CHECK POINT: Ⓖ ~ Ⓛ
4 HEAD SWITCHING PULSE CHECK POINT: Ⓞ

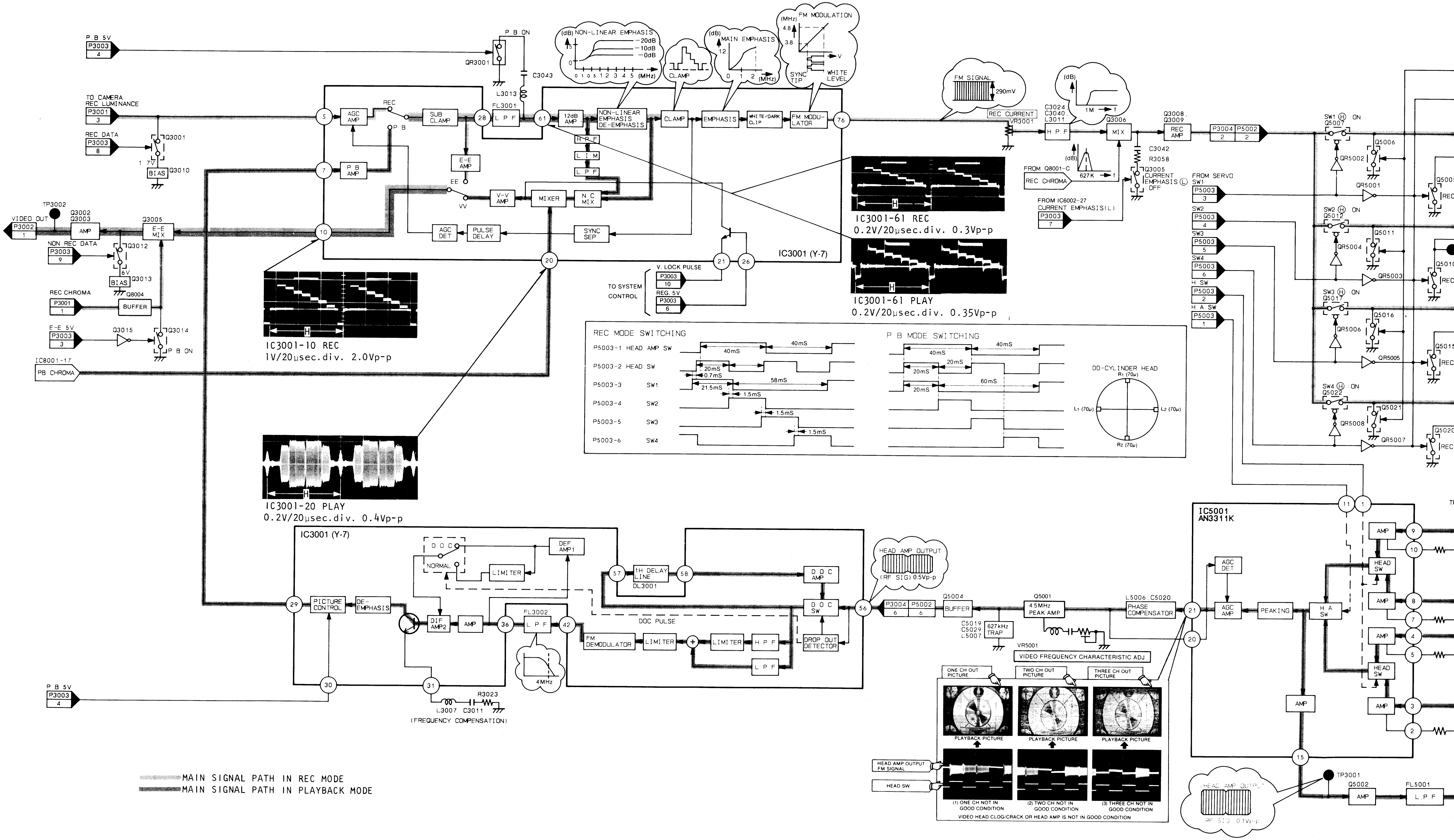

FROM IC6002-40
CYL ON Ⓗ
Ⓐ VSS 1Vp-p 50Hz
VSS
Q2001
3.58MHz
Ⓖ 0.6Vp-p 3.58MHz
FROM IC6002-36, 35
VSC0 / VSC1
L
H
STILL
NORMAL (X1)
UNLOAD
FF/REV CUE/REY
VSC 0
VSC 1
FROM IC6002-38
REC(H)/P.B(M)/MEMORY(L)
FROM IC6002-39
TSG(NOR Ⓜ /REC-ST Ⓛ)
FROM IC6002-37
REV(H)/STOP(M)/FWD(L)
REC
COUNT DOWN CLOCK
P.B
CYL DIGITAL PHASE LOOP
CYL DIGITAL SPEED LOOP
MODE INSTRUCTION DECORDER
1/2 VSS GENERATOR
IC2001
MN6179VBES
TP2003
Ⓔ 5Vp-p 3.5kHz 50% ~ 50% DUTY AT SPECIFIC SPEED
5Vp-p 7kHz
NORMAL 2.5V SPEED UP → VOLTAGE UP SPEED DOWN → VOLTAGE DOWN
C2011, C2010
L P F
IC2003
(AMP)
+B
VR2001
PG SHIFT
Q2002
1/2VCC
3V
+5V
Q2005
Q2006
Q2007
DC2 4V
SPEED UP → VOLTAGE UP SPEED DOWN → VOLTAGE DOWN
Q2009
Q201
F/S/R
VCC
3-DIFERENC LOGIC
H1+ H1- H2+ H2-
Ⓒ 300Hz
PGM M
IC2007
μPC1542AG
FG OUT
H SW
REC/PB
SW4 SW3 SW2 SW1
HAMP
PG
FG
TP2001
Ⓕ IC2003-2,3,4,5,6,7 80mVp-p
Ⓑ
H.SW
P2004
CTL HEAD
P2005
P4002
REC 25Hz 4Vp-p
AMP
TP2002
TR CONTROL
TR FIX
VR2002
+5V
TR VR
TR MMV
IC2002
AN3792S
TP2014
IC2001
COUNT DOWN CLOCK
CAP DIGITAL PHASE LOOP
CAP DIGITAL SPEED LOOP
Ⓙ 5Vp-p 3.5kHz 50% ~ 50% DUTY AT SPECIFIC SPEED
TP2004
4Vp-p 25Hz Ⓓ
NORMAL 2.5V SPEED UP → VOLTAGE UP SPEED DOWN → VOLTAGE DOWN
C2009, C2012
REF V
1.8V
IC2004
NORMAL 2.5V SPEED UP → VOLTAGE UP SPEED DOWN → VOLTAGE DOWN
CAP FG HEAD
P2006
BUFFER
Q2012
IC2004
DIFF AMP
Q2013, Q2014
Q2015
TP2015
5Vp-p 14kHz
Ⓗ 40mS IC2001-23 1.7Vp-p 25Hz
Ⓘ Q2013-B 1Vp-p P.B 1142Hz
FROM IC6002-33
IMV
CUE/REV/STILL Ⓗ
Q2016
Q2003
TP2009
TO LUMINANCE
V.LOCK
E.E 5V
TORQUE CONTROL
DIFFERENTIAL AMP
MOTOR ROTATION DETECTION
POSI SIGN PROC
FROM IC6002-37
REV Ⓗ STOP Ⓜ FWD Ⓛ
REW/REV STILL FF/CUE Ⓚ
5V 2V 0V
SW4 SW3 SW2 SW1
HEAD AMP SW
TO HEAD AMP
Ⓞ REC MODE SWITCHING
P.B MODE SWITCHING
IC2007-11 HEAD AMP SW
-16 HEAD SW
-15 SW1
-14 SW2
-13 SW3
-12 SW4
40mS
20mS
0.7mS
58mS
1.3mS
60mS
CYLINDER SERVO S
CAPSTAN SERVO SP
CYLINDER SERVO P
CAPSTAN SERVO PH

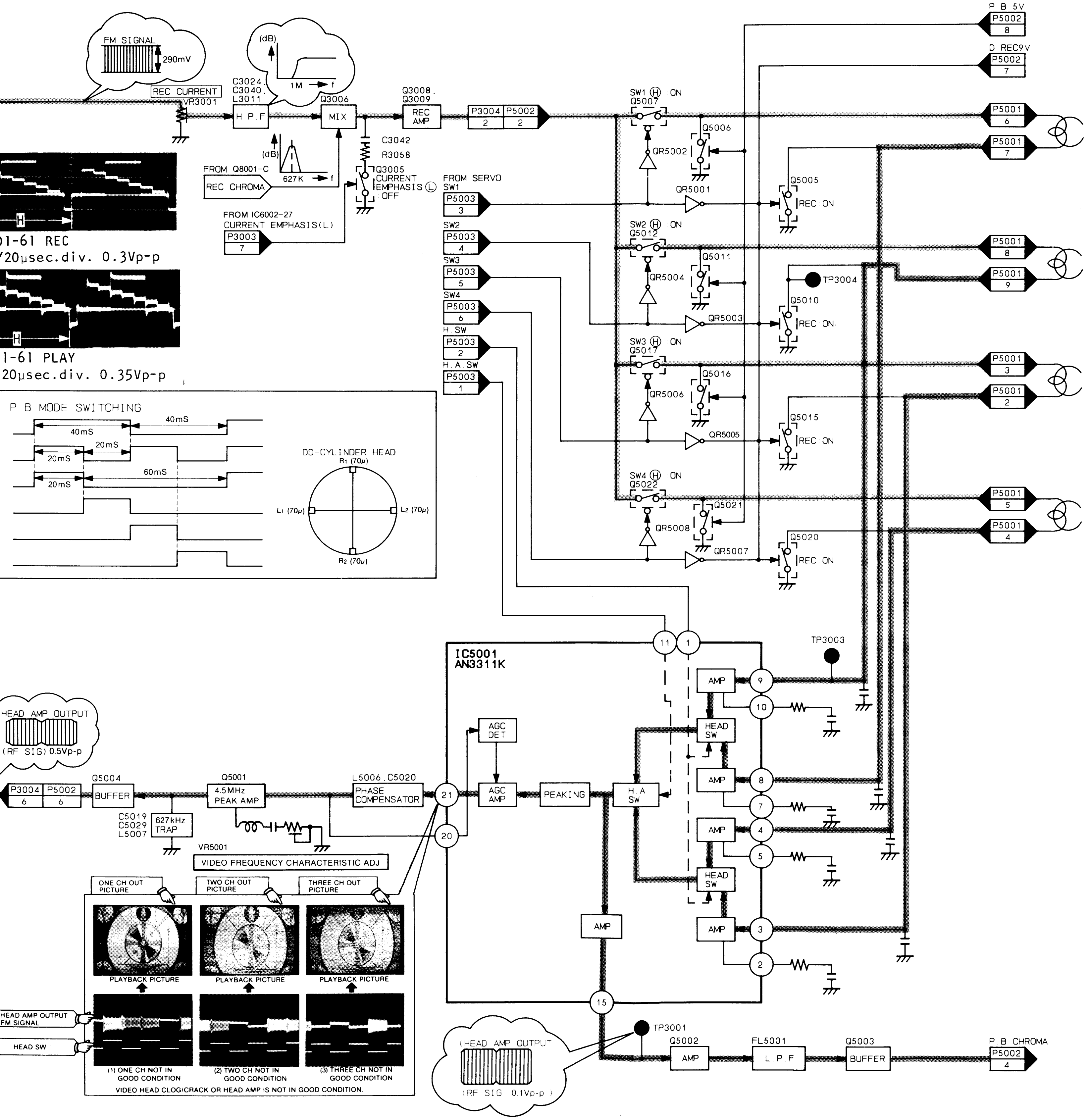
CTION CHECK POINT: Ⓐ ~ Ⓖ
CTION CHECK POINT: Ⓖ ~ Ⓛ
PULSE CHECK POINT: Ⓞ



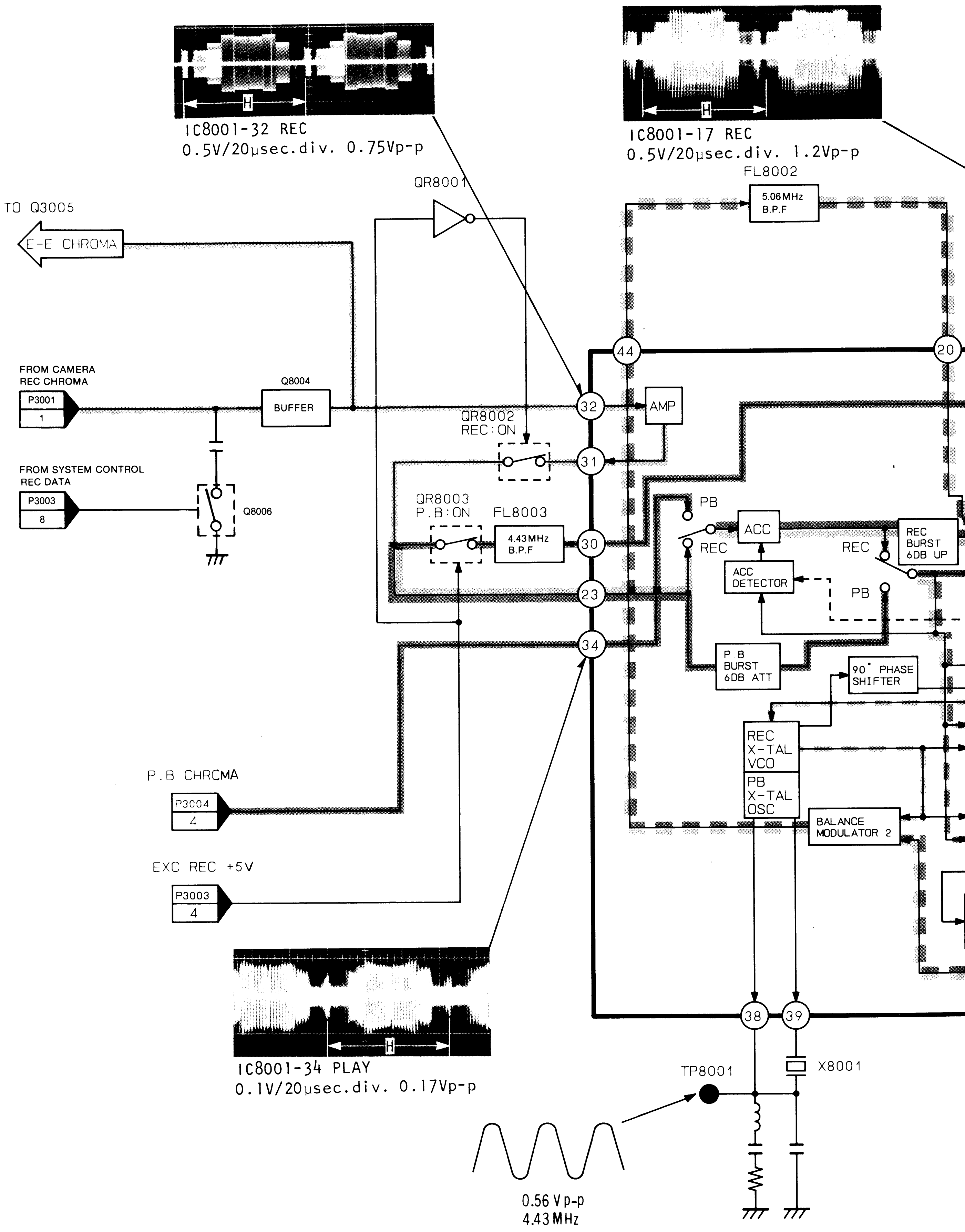
+5V
TO POWER
CYL F B
CYL POWER
TP2003
Ⓔ 5Vp-p 3.5kHz 50% — 50% DUTY AT SPECIFIC SPEED
NORMAL 2.5V (SPEED UP → VOLTAGE UP, SPEED DOWN → VOLTAGE DOWN)
Q2002
3V
1/2VCC
C2011.C2010
L P F
IC2003 (AMP)
Q2005
Q2006
Q2007
DC2.4V
SPEED UP → VOLTAGE UP
SPEED DOWN → VOLTAGE DOWN
+B
VR2001
PG SHIFT
5Vp-p 7kHz
DIGITAL
C2001
MN6179VBES
Ⓒ 300Hz
PGM M
IC2007
μPC1542AG
FG OUT
H SW
REC/PB
SW4 SW3 SW2 SW1
HAMP
PG
FG
H.SW
P2004
TP2001
TP2004
4Vp-p 25Hz Ⓓ
Q2009 Q2010 Q2011
F/S/R
VCC
3-DIFERENCIAL LOGIC
H1+ H1− H2+ H2− H3+ H3−
IC2005
TA7745P
Ⓕ IC2003-2,3,4,5,6,7 80mVp-p
Ⓑ 26.5mS 40mVp-p
M3 M2 M1
P2002
PG MAGNET
HALL IC1
HALL IC2
HALL IC3
CYL PG
P2001
CYL FG
3.4mS
24mVp-p
DD CYLINDER MOTOR
Ⓙ 5Vp-p 3.5kHz 50% — 50% DUTY AT SPECIFIC SPEED
IC2001
P B
COUNT DOWN CLOCK
REC
CAP DIGITAL PHASE LOOP
CAP DIGITAL SPEED LOOP
TP2014
NORMAL 2.5V (SPEED UP → VOLTAGE UP, SPEED DOWN → VOLTAGE DOWN)
L P F
C2009.C2012
REF V
1.8V
IC2004
5Vp-p 14kHz
TP2015
Q2014
Q2015
FROM IC6002-33
IMV
CUE/REV/STILL Ⓗ
Q2016
Q2003
TP2009
42Hz
TO POWER
CAP F B
FROM POWER
CAP POWER
Q2004
NORMAL 2.5V (SPEED UP → VOLTAGE UP, SPEED DOWN → VOLTAGE DOWN)
IC2006 ① ③ ㉓
TORQUE CONTROL
DIFFEREN-TIAL AMP
MOTOR ROTATION DETECTION
POSITION SIGNAL PROCESS
IC2006
AN3821K
P2003
FROM IC6002-37
REV Ⓗ STOP Ⓜ FWD Ⓛ
REW/REV STILL FF/CUE
5V 2V 0V Ⓚ
TO CAP HALL IC
Ⓛ IC2006-6,7,8,9,10 60mVp-p P.B
DD CAPSTAN MOTOR
Ⓞ REC MODE SWITCHING
IC2007-11 HEAD AMP SW
-16 HEAD SW
-15 SW1
-14 SW2
-13 SW3
-12 SW4
40mS
20mS
0.7mS
58mS
1.3mS
P B MODE SWITCHING
60mS
CYLINDER SERVO SPEED LOOP
CAPSTAN SERVO SPEED LOOP
CYLINDER SERVO PHASE LOOP
CAPSTAN SERVO PHASE LOOP

3-8. LUMINANCE PROCESS BLOCK DIAGRAM

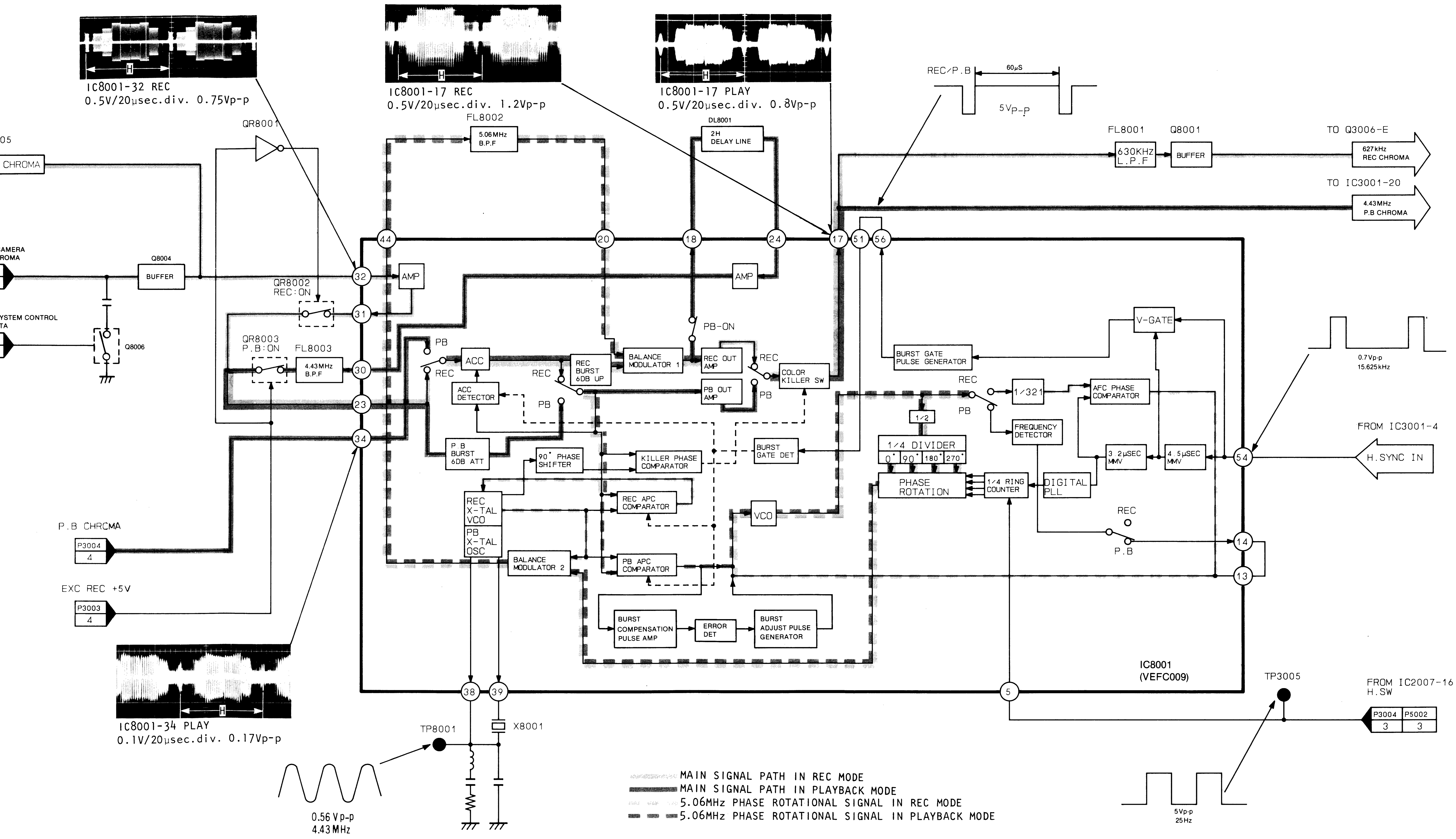

P B 5V
P3003 4
P B ON
QR3001
C3043
L3013
TO CAMERA REC LUMINANCE
P3001 3
REC DATA
P3003 8
Q3001
1 7V
BIAS
Q3010
AGC AMP
REC
P B
SUB CLAMP
FL3001
L P F
12dB AMP
NON-LINEAR EMPHASIS DE-EMPHASIS
CLAMP
EMPHASIS
WHITE/DARK CLIP
FM MODULATOR
(dB) NON-LINEAR EMPHASIS
-20dB
-10dB
-0dB
(MHz)
MAIN EMPHASIS
(MHz) FM MODULATION
4.8
3.8
SYNC TIP
WHITE LEVEL
H P F
L I M
L P F
E-E AMP
EE
VV
V-V AMP
MIXER
N C MIX
P B AMP
AGC DET
PULSE DELAY
SYNC SEP
TP3002
VIDEO OUT
P3002 1
Q3002 Q3003
AMP
Q3005
E-E MIX
NON REC DATA
P3003 9
Q3012
6V
BIAS
Q3013
REC CHROMA
P3001 1
Q8004
BUFFER
E-E 5V
P3003 3
Q3015
Q3014
P B ON
IC8001-17
PB CHROMA
IC3001 (Y-7)
V. LOCK PULSE
P3003 10
TO SYSTEM CONTROL
REG. 5V
P3003 6
FM SIGNAL
290mV
REC CURRENT
VR3001
C3024 C3040 L3011
H P F
1M
Q3006
MIX
FROM Q8001-C
REC CHROMA
627K
C3042
R3058
Q3005
CURRENT EMPHASIS Ⓛ OFF
FROM IC6002-27
CURRENT EMPHASIS(L)
P3003 7
Q3008 Q3009
REC AMP
P3004 2
P5002 2
FROM SERVO
SW1
P5003 3
SW2
P5003 4
SW3
P5003 5
SW4
P5003 6
H SW
P5003 2
H A SW
P5003 1
SW1 Ⓗ ON
Q5007
Q5006
QR5002
QR5001
SW2 Ⓗ ON
Q5012
Q5011
QR5004
QR5003
SW3 Ⓗ ON
Q5017
Q5016
QR5006
QR5005
SW4 Ⓗ ON
Q5022
Q5021
QR5008
QR5007
REC
IC3001-10 REC
1V/20μsec.div. 2.0Vp-p
IC3001-61 REC
0.2V/20μsec.div. 0.3Vp-p
IC3001-61 PLAY
0.2V/20μsec.div. 0.35Vp-p
IC3001-20 PLAY
0.2V/20μsec.div. 0.4Vp-p
H
REC MODE SWITCHING
P B MODE SWITCHING
P5003-1 HEAD AMP SW
P5003-2 HEAD SW
P5003-3 SW1
P5003-4 SW2
P5003-5 SW3
P5003-6 SW4
40mS
20mS
0.7mS
21.5mS
58mS
60mS
1.5mS
DD-CYLINDER HEAD
R1 (70μ)
L1 (70μ)
L2 (70μ)
R2 (70μ)
IC3001 (Y-7)
D O C
NORMAL
LIMITER
DEF AMP1
1H DELAY LINE
DL3001
D O C AMP
D O C SW
DROP OUT DETECTOR
HEAD AMP OUTPUT
(RF SIG) 0.5Vp-p
PICTURE CONTROL
DE-EMPHASIS
DIF AMP2
AMP
FL3002
L P F
4MHz
FM DEMODULATOR
LIMITER
LIMITER
H P F
L P F
DOC PULSE
P B 5V
P3003 4
L3007 C3011
R3023
(FREQUENCY COMPENSATION)
P3004 6
P5002 6
Q5004
BUFFER
C5019 C5029 L5007
627kHz TRAP
Q5001
4.5MHz PEAK AMP
VR5001
VIDEO FREQUENCY CHARACTERISTIC ADJ
L5006 C5020
PHASE COMPENSATOR
IC5001 AN3311K
AGC DET
AGC AMP
PEAKING
H A SW
HEAD SW
AMP
ONE CH OUT PICTURE
TWO CH OUT PICTURE
THREE CH OUT PICTURE
PLAYBACK PICTURE
HEAD AMP OUTPUT FM SIGNAL
HEAD SW
(1) ONE CH NOT IN GOOD CONDITION
(2) TWO CH NOT IN GOOD CONDITION
(3) THREE CH NOT IN GOOD CONDITION
VIDEO HEAD CLOG/CRACK OR HEAD AMP IS NOT IN GOOD CONDITION
TP3001
Q5002
FL5001
L P F
HEAD AMP OUTPUT
RF SIG 0.1Vp-p
MAIN SIGNAL PATH IN REC MODE
MAIN SIGNAL PATH IN PLAYBACK MODE


FM SIGNAL
290mV
REC CURRENT
VR3001
C3024
C3040
L3011
H.P.F
(dB)
1M
f
Q3006
MIX
(dB)
627K
FROM Q8001-C
REC CHROMA
C3042
R3058
Q3005
CURRENT
EMPHASIS Ⓛ
OFF
FROM IC6002-27
CURRENT EMPHASIS(L)
P3003
7
Q3008,
Q3009
REC
AMP
P3004
2
P5002
2
FROM SERVO
SW1
P5003
3
SW2
P5003
4
SW3
P5003
5
SW4
P5003
6
H SW
P5003
2
H A SW
P5003
1
SW1 Ⓗ : ON
Q5007
Q5006
QR5002
QR5001
Q5005
REC ON
SW2 Ⓗ : ON
Q5012
Q5011
QR5004
QR5003
TP3004
Q5010
REC ON
SW3 Ⓗ : ON
Q5017
Q5016
QR5006
QR5005
Q5015
REC ON
SW4 Ⓗ : ON
Q5022
Q5021
QR5008
QR5007
Q5020
REC ON
P B 5V
P5002
8
D REC9V
P5002
7
P5001
6
P5001
7
R1
P5001
8
P5001
9
L1
P5001
3
P5001
2
R2
P5001
5
P5001
4
L2
01-61 REC
/20μsec.div. 0.3Vp-p
H
01-61 PLAY
20μsec.div. 0.35Vp-p
P B MODE SWITCHING
40mS
40mS
20mS
20mS
20mS
60mS
DD-CYLINDER HEAD
R1 (70μ)
L1 (70μ)
L2 (70μ)
R2 (70μ)
IC5001
AN3311K
11
1
TP3003
AMP
9
10
AGC
DET
HEAD
SW
AGC
AMP
PEAKING
H A
SW
AMP
8
7
AMP
4
5
HEAD
SW
AMP
AMP
3
2
21
20
15
HEAD AMP OUTPUT
(RF SIG) 0.5Vp-p
Q5004
P3004
6
P5002
6
BUFFER
C5019
C5029
L5007
627kHz
TRAP
Q5001
4.5MHz
PEAK AMP
L5006, C5020
PHASE
COMPENSATOR
VR5001
VIDEO FREQUENCY CHARACTERISTIC ADJ
ONE CH OUT
PICTURE
TWO CH OUT
PICTURE
THREE CH OUT
PICTURE
PLAYBACK PICTURE
PLAYBACK PICTURE
PLAYBACK PICTURE
HEAD AMP OUTPUT
FM SIGNAL
HEAD SW
(1) ONE CH NOT IN
GOOD CONDITION
(2) TWO CH NOT IN
GOOD CONDITION
(3) THREE CH NOT IN
GOOD CONDITION
VIDEO HEAD CLOG/CRACK OR HEAD AMP IS NOT IN GOOD CONDITION
HEAD AMP OUTPUT
(RF SIG 0.1Vp-p)
TP3001
Q5002
AMP
FL5001
L P F
Q5003
BUFFER
P B CHROMA
P5002
4

3-9. CHROMINANCE PROCESS BLOCK DIAGRAM


H
IC8001-32 REC
0.5V/20μsec.div. 0.75Vp-p
H
IC8001-17 REC
0.5V/20μsec.div. 1.2Vp-p
FL8002
5.06MHz
B.P.F
QR8001
TO Q3005
E-E CHROMA
FROM CAMERA
REC CHROMA
P3001
1
Q8004
BUFFER
QR8002
REC:ON
FROM SYSTEM CONTROL
REC DATA
P3003
8
Q8006
QR8003
P.B:ON
FL8003
4.43MHz
B.P.F
44
20
32
AMP
31
30
23
34
PB
REC
ACC
ACC
DETECTOR
REC
BURST
6DB UP
REC
PB
P B
BURST
6DB ATT
90° PHASE
SHIFTER
REC
X-TAL
VCO
PB
X-TAL
OSC
BALANCE
MODULATOR 2
P.B CHRCMA
P3004
4
EXC REC +5V
P3003
4
H
IC8001-34 PLAY
0.1V/20μsec.div. 0.17Vp-p
38
39
TP8001
X8001
0.56 Vp-p
4.43 MHz

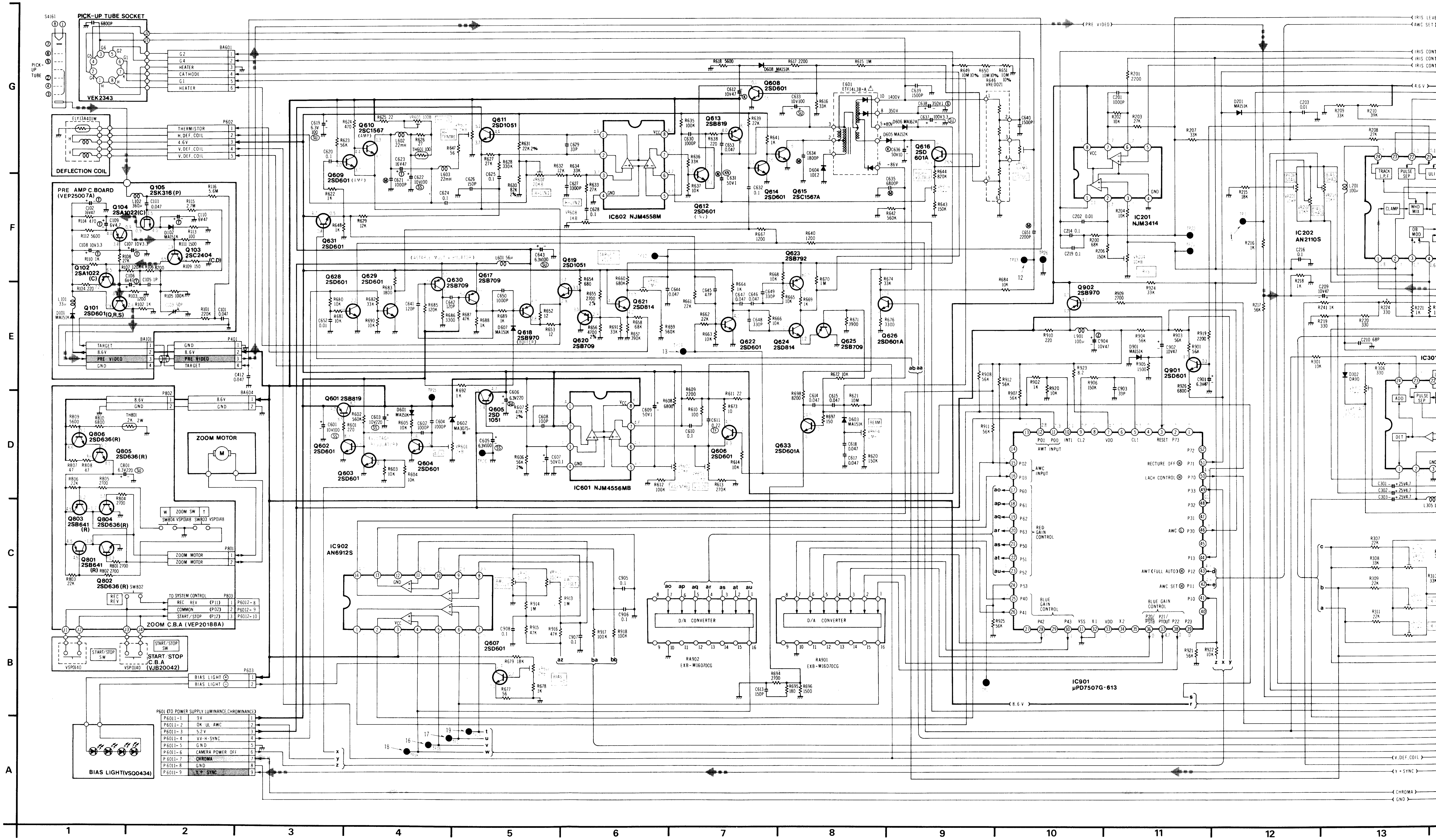
CHROMINANCE PROCESS BLOCK DIAGRAM


IC8001-32 REC
0.5V/20μsec.div. 0.75Vp-p
IC8001-17 REC
0.5V/20μsec.div. 1.2Vp-p
IC8001-17 PLAY
0.5V/20μsec.div. 0.8Vp-p
REC/P.B
60μS
5Vp-p
FL8002
5.06MHz B.P.F
DL8001
2H DELAY LINE
FL8001
Q8001
630KHZ L.P.F
BUFFER
TO Q3006-E
627kHz REC CHROMA
TO IC3001-20
4.43MHz P.B CHROMA
QR8001
05
CHROMA
AMERA
ROMA
Q8004
BUFFER
YSTEM CONTROL
TA
Q8006
QR8002
REC:ON
QR8003
P.B:ON
FL8003
4.43MHz B.P.F
44
20
18
24
17
51
56
32
31
30
23
34
AMP
AMP
PB-ON
PB
REC
ACC
ACC DETECTOR
REC
PB
REC BURST 6DB UP
BALANCE MODULATOR 1
REC OUT AMP
PB OUT AMP
REC
PB
COLOR KILLER SW
BURST GATE PULSE GENERATOR
V-GATE
0.7Vp-p
15.625kHz
REC
PB
1/321
AFC PHASE COMPARATOR
FREQUENCY DETECTOR
1/2
1/4 DIVIDER
0°
90°
180°
270°
PHASE ROTATION
1/4 RING COUNTER
DIGITAL PLL
3.2μSEC MMV
4.5μSEC MMV
54
FROM IC3001-4
H.SYNC IN
P B BURST 6DB ATT
90° PHASE SHIFTER
KILLER PHASE COMPARATOR
BURST GATE DET
REC X-TAL VCO
PB X-TAL OSC
REC APC COMPARATOR
VCO
REC
P.B
14
13
BALANCE MODULATOR 2
PB APC COMPARATOR
BURST COMPENSATION PULSE AMP
ERROR DET
BURST ADJUST PULSE GENERATOR
IC8001
(VEFC009)
P.B CHRCMA
P3004
4
EXC REC +5V
P3003
4
IC8001-34 PLAY
0.1V/20μsec.div. 0.17Vp-p
38
39
5
TP8001
X8001
0.56Vp-p
4.43MHz
TP3005
FROM IC2007-16
H.SW
P3004
P5002
3
3
5Vp-p
25Hz
MAIN SIGNAL PATH IN REC MODE
MAIN SIGNAL PATH IN PLAYBACK MODE
5.06MHz PHASE ROTATIONAL SIGNAL IN REC MODE
5.06MHz PHASE ROTATIONAL SIGNAL IN PLAYBACK MODE
H
H
H
H

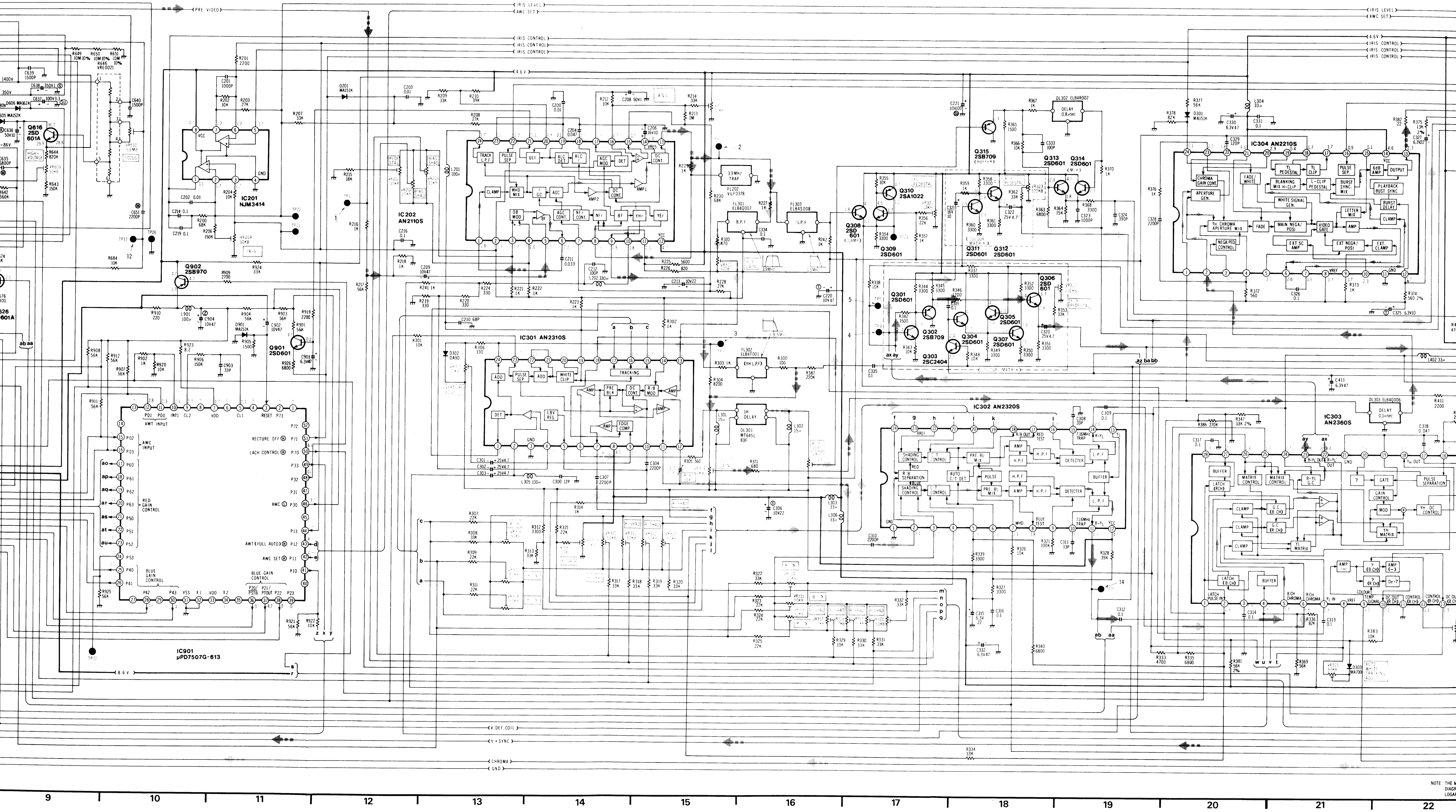
Next Page:
CAMERA Section

3-10. CAMERA SCHEMATIC DIAGRAM

B & B-Y SIGNAL PATH R & R-Y SIGNAL PATH YH & PRE

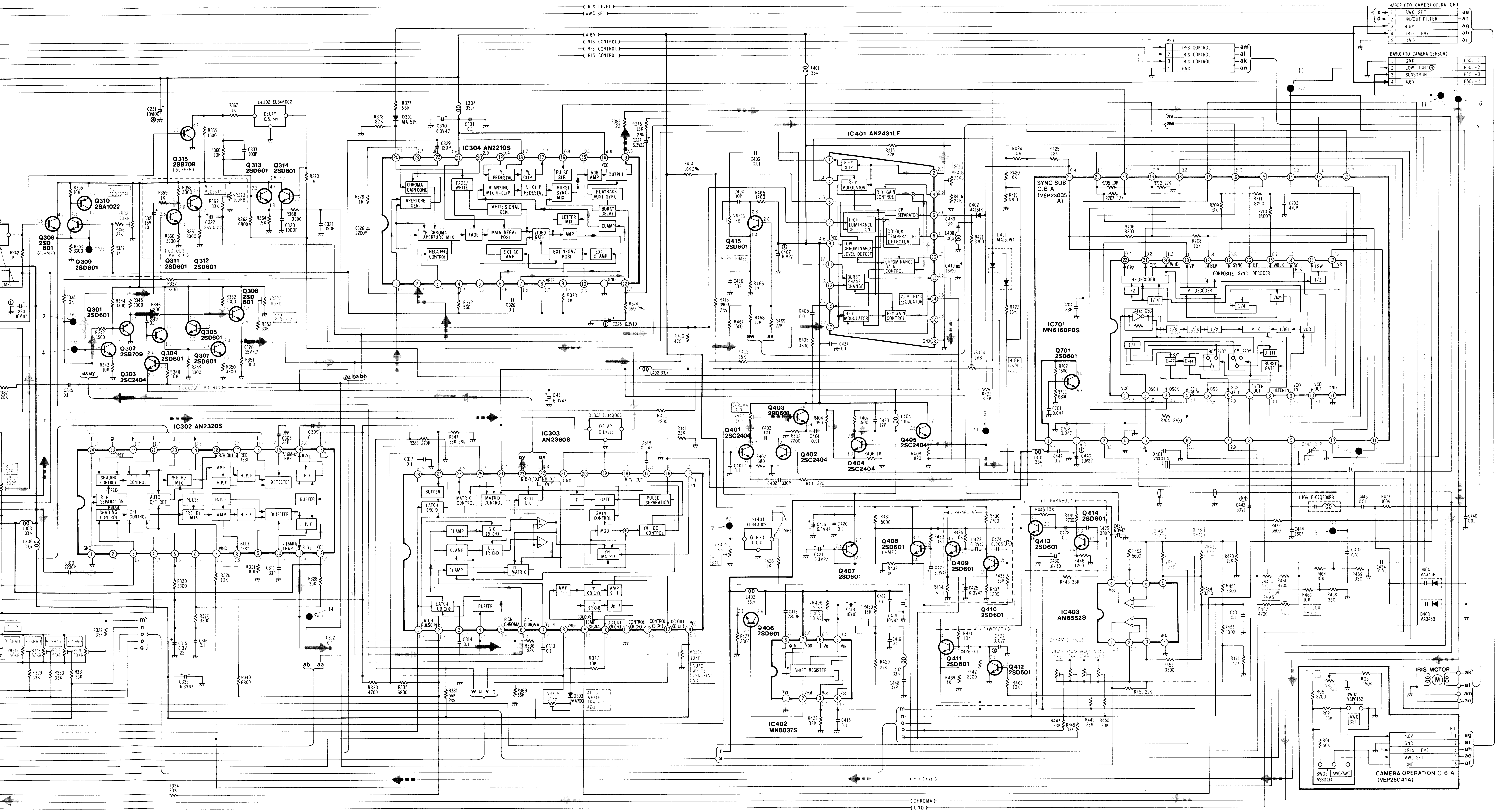

PICK-UP TUBE SOCKET
VEK2343
PICK-UP TUBE
DEFLECTION COIL
PRE AMP C.BOARD (VEP25007A)
Q101 2SD601(Q,R,S)
Q102 2SA1022(C)
Q103 2SC2404(C,D)
Q104 2SA1022(C)
Q105 2SK316(P)
BA101
P401
BA601
P602
TARGET
8.6V
PRE VIDEO
GND
G2
G4
HEATER
CATHODE
G1
THERMISTOR
H.DEF.COIL
4.6V
V.DEF.COIL
ZOOM MOTOR
ZOOM SW
ZOOM C.B.A (VEP20188A)
Q801 2SB641(R)
Q802 2SD636(R)
Q803 2SB641(R)
Q804 2SD636(R)
Q805 2SD636(R)
Q806 2SD636(R)
TO SYSTEM CONTROL
REC REV
COMMON
START/STOP
START/STOP SW
START STOP C.B.A (VJB20042)
BIAS LIGHT
BIAS LIGHT(VSQ0434)
P601 (TO POWER SUPPLY,LUMINANCE,CHROMINANCE)
9V
UL AWC
5.2V
VV·H·SYNC
CAMERA POWER OFF
CHROMA
Y + SYNC
Q601 2SB819
Q602 2SD601
Q603 2SD601
Q604 2SD601
Q605 2SD1051
Q606 2SD601
Q607 2SD601
Q608 2SD601
Q609 2SD601
Q610 2SC1567
Q611 2SD1051
Q612 2SD601
Q613 2SB819
Q614 2SD601
Q615 2SC1567A
Q616 2SD601A
Q617 2SB709
Q618 2SB970
Q619 2SD1051
Q620 2SB709
Q621 2SD814
Q622 2SD601
Q623 2SB792
Q624 2SD814
Q625 2SB709
Q626 2SD601A
Q628 2SD601
Q629 2SD601
Q630 2SB709
Q631 2SD601
Q633 2SD601A
IC601 NJM4556MB
IC602 NJM4558M
E601 ETF14L38-A
IC902 AN6912S
D/A CONVERTER
RA902 EXB-M16D70CG
RA901 EXB-M16D70CG
Q901 2SD601
Q902 2SB970
IC901 μPD7507G-613
AWC INPUT
RED GAIN CONTROL
BLUE GAIN CONTROL
AWT INPUT
RECTURE OFF
LACH CONTROL
AWT (FULL AUTO)
AWC SET
IC201 NJM3414
IC202 AN2110S
TRACK L.P.F
PULSE SEP
CLAMP
WHD MIX
DB MOD
ADD
DET
IRIS LEVEL
AWC SET
IRIS CONT
4.6V
PRE VIDEO
8.6V
V.DEF.COIL
Y + SYNC
CHROMA
GND
G
F
E
D
C
B
A
1
2
3
4
5
6
7
8
9
10
11
12
13

B & B-Y SIGNAL PATH R & R-Y SIGNAL PATH YH & PRE VIDEO SIGNAL PATH CHROMA(PRE VIDEO) SIGNAL PATH


(PRE VIDEO)
(IRIS LEVEL)
(AWC SET)
(IRIS CONTROL)
(4.6V)
IC201 NJM3414
IC202 AN2110S
IC301 AN2310S
IC302 AN2320S
IC303 AN2360S
IC304 AN2210S
IC901 μPD7507G-613
Q616 2SD601A
Q901 2SD601
Q902 2SB970
Q301 2SD601
Q302 2SB709
Q303 2SC2404
Q304 2SD601
Q305 2SD601
Q306 2SD601
Q307 2SD601
Q308 2SD601
Q309 2SD601
Q310 2SA1022
Q311 2SD601
Q312 2SD601
Q313 2SD601
Q314 2SD601
Q315 2SB709
DL301 MT645L
DL302 ELB4R002
DL303 ELB4Q006
FL202 VLF0378
FL301 ELB4Q007
FL302 ELB4T001
FL303 ELB4S008
AWT INPUT
AWC INPUT
RED GAIN CONTROL
BLUE GAIN CONTROL
RECTURE OFF
LACH CONTROL
AWC
AWT (FULL AUTO)
AWC SET
8.6V
(V.DEF.COIL)
(Y+SYNC)
(CHROMA)
(GND)
9
10
11
12
13
14
15
16
17
18
19
20
21
22

NOTE: THE M
DIAGR
LOGAR

PRE VIDEO) SIGNAL PATH


IC304 AN2210S
IC302 AN2320S
IC303 AN2360S
IC401 AN2431LF
IC402 MN8037S
IC403 AN6552S
IC701 MN6160PBS
SYNC SUB C.B.A (VEP23035A)
CAMERA OPERATION C.B.A (VEP26041A)
IRIS MOTOR
BA902 (TO CAMERA OPERATION)
BA901 (TO CAMERA SENSOR)
P201
P01
IRIS LEVEL
AWC SET
4.6V
IRIS CONTROL
GND
Y + SYNC
CHROMA
DL302 ELB4R002
DL303 ELB4Q006
FL401 ELB4Q009
COLOUR MATRIX
COMPOSITE SYNC DECODER
SHIFT REGISTER
SW01 AWC/AWT VSS0134
SW02 VSP0152

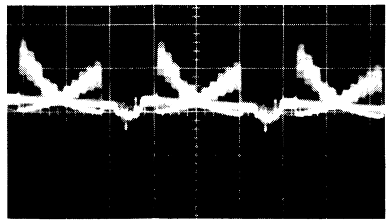
NOTE: THE MEASUREMENT MODE OF THE DC VOLTAGE ON THIS DIAGRAM IS STOP MODE WITH AIM THE CAMERA AT THE LOGARITHMIC GRAY SCALE CHART.

NOTE: THE WAVEFORM OF THIS DIAGRAM MEASURED WITH AIM THE CAMERA AT THE LOGARITHMIC GRAY SCALE CHART.

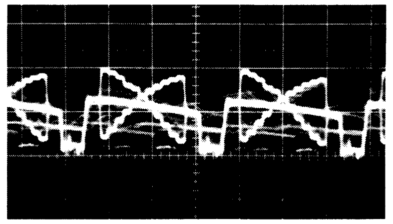
IMPORTANT SAFETY NOTICE:
COMPONENTS IDENTIFIED WITH THE MARK ⚠ HAVE THE SPECIAL CHARACTERISTICS FOR SAFETY WHEN REPLACING ANY OF THESE COMPONENTS. USE ONLY THE SAME TYPE.

NOTE: DO NOT USE THE PART NUMBER SHOWN ON THIS DRAWING FOR ORDERING. THE CORRECT PART NUMBER IS SHOWN IN THE PARTS LIST. AND MAY BE SLIGHTLY DIFFERENT OR AMENDED SINCE THIS DRAWING WAS PREPARED

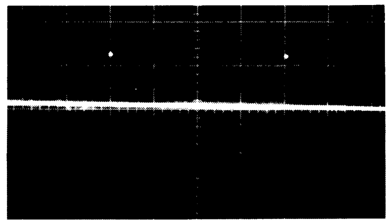
17 18 19 20 21 22 23 24 25 26 27 28 29



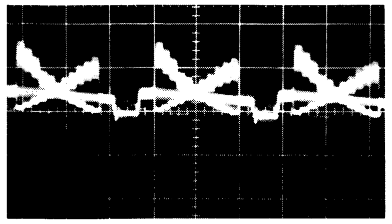
①TP1
0.5V/20μsec. div. 0.75Vp-p
(Trigger: TP10)



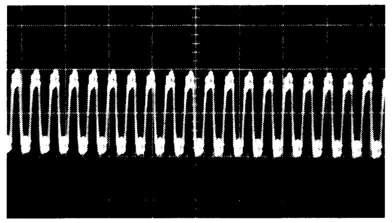
⑦TP7
0.1V/20μsec. div. 0.2Vp-p
(Trigger: TP10)



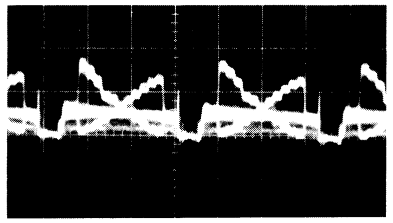
⑬TP14
5V/5msec. div. 6Vp-p



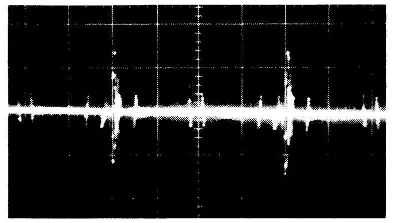
②TP2
0.5V/20μsec. div. 0.75Vp-p



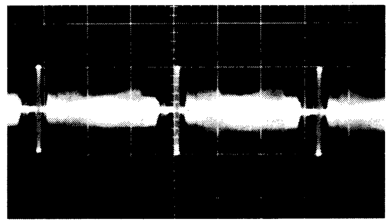
⑧TP8
0.1V/0.5μsec. div. 0.2Vp-p



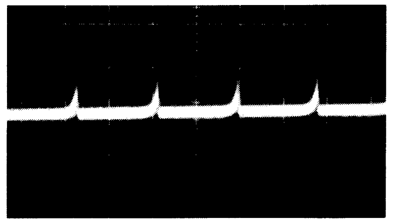
⑭TP25
0.2V/20μsec. div. 0.32Vp-p



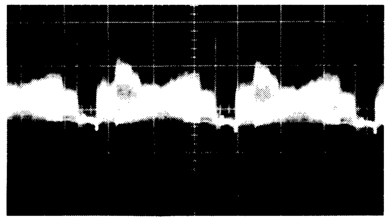
③TP3
0.5V/5msec. div.



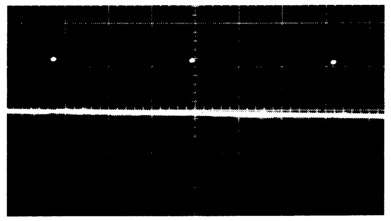
⑨TP9
0.2V/20μsec. div. 0.4Vp-p
(Trigger: TP10)



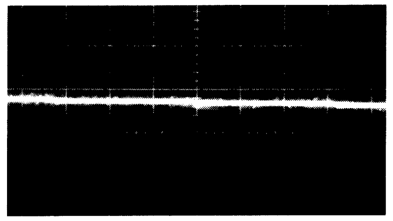
⑮TP27
0.2V/20μsec. div. 0.2Vp-p



④TP4
0.2V/20μsec. div. 0.24Vp-p
(Trigger: TP10)



⑩TP10
0.2V/20μsec. div. 0.22Vp-p

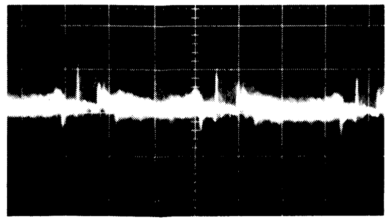


⑯TP16
DC 1.9V

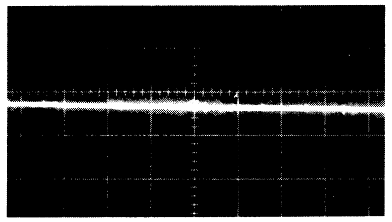
⑰TP17
DC 1.9V

⑱TP18
DC 1.5V

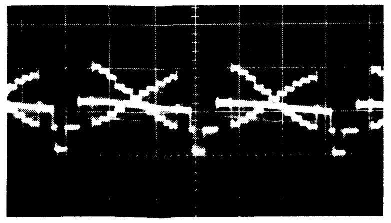
⑲TP19
DC 1.5V



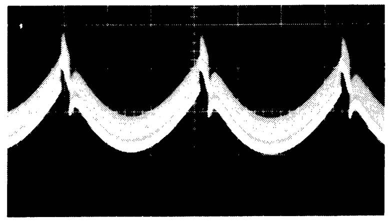
⑤TP5
0.1V/20μsec. div. 0.15Vp-p
(Trigger: TP10)



⑪TP11
0.5V/20μsec. div. DC 1.7V
(Trigger: TP10)



⑥TP6
1V/20μsec. div. 2Vp-p
(Trigger: TP10)



⑫TP13
2V/20μsec. div. 4.8Vp-p
(Trigger: TP10)

CAMERA SCHEMATIC

Transistor	
Q101	E-1
Q102	F-1
Q103	F-2
Q104	F-1
Q105	F-2
Q301	E-17
Q302	E-17
Q303	E-17
Q304	E-18
Q305	E-18
Q306	E-18
Q307	E-18
Q308	F-17
Q309	F-17
Q310	F-17
Q311	F-18
Q312	F-18
Q313	G-18
Q314	G-19
Q315	G-18
Q401	D-23
Q402	D-23
Q403	D-23
Q404	D-24
Q405	D-24
Q406	B-23
Q407	C-24
Q408	C-24
Q409	C-25
Q410	C-25
Q411	B-25
Q412	B-25
Q413	C-26
Q414	C-26
Q415	F-23
Q601	D-3
Q602	D-3
Q603	D-4
Q604	D-4
Q605	D-5
Q606	D-7
Q607	B-5
Q608	G-7
Q609	F-3
Q610	G-4
Q611	G-5
Q612	F-7
Q613	G-7
Q614	F-7
Q615	F-8
Q616	G-9
Q617	F-5
Q618	E-5
Q619	F-6
Q620	E-6
Q621	E-6
Q622	E-7
Q623	F-8
Q624	E-8
Q625	E-8
Q626	E-9
Q628	F-3
Q629	F-4
Q630	E-4
Q631	F-3
Q633	D-8
Q701	E-26
Q801	C-1
Q802	C-1
Q803	C-1
Q804	C-1
Q805	D-1
Q806	D-1
Q901	E-11
Q902	E-10

Integrated Circuit	
IC201	F-11
IC202	F-12
IC301	E-14
IC302	D-18
IC303	D-21
IC304	G-20
IC401	G-24
IC402	A-23
IC403	B-26
IC601	D-6
IC602	F-6
IC701	E-26
IC901	B-10
IC902	C-3

Test Point	
TP1	F-12
TP2	G-15
TP3	E-15
TP4	E-17
TP5	E-17
TP6	G-29
TP7	C-23
TP8	C-28
TP9	D-25
TP10	D-29
TP11	G-29
TP12	F-6
TP13	F-10
TP14	E-7
TP15	D-4
TP16	A-4
TP17	A-5
TP18	A-4
TP19	A-5
TP20	B-9
TP21	F-11
TP22	F-11
TP24	F-17
TP25	B-19
TP26	F-10
TP27	G-28

Adjustment	
VR02	B-28
VR201	F-12
VR202	F-12
VR203	F-13
VR204	F-11
VR205	G-15
VR301	E-13
VR302	F-15
VR303	D-16
VR304	D-15
VR306	C-13
VR307	C-13
VR308	B-13
VR309	C-14
VR310	C-14
VR311	C-14
VR312	C-15
VR313	C-15
VR314	C-16
VR315	B-16
VR316	B-16
VR317	B-16
VR318	B-16
VR319	B-17
VR320	B-17
VR321	F-17
VR322	E-19
VR323	F-18
VR324	B-22
VR325	B-21
VR401	D-23
VR403	F-25
VR404	E-25
VR405	C-23
VR406	C-24
VR407	B-26
VR408	B-26
VR409	B-26
VR410	B-26
VR411	C-27
VR412	C-27
VR413	C-28
VR414	C-28
VR415	F-23
VR601	D-5
VR602	D-7
VR603	D-7
VR604	D-8
VR605	G-4
VR606	G-5
VR607	F-5
VR608	F-6
VR609	F-9
VR610	G-10
VR611	E-6
VR612	B-5
VR901	C-5
VR902	C-5
C103	E-2
C305	D-15
C442	D-28

Connector	
P01	A-29
P201	G-27
P401	E-2
P601	B-2
P602	G-2
P603	B-3
P801	C-2
P802	D-2
P803	C-2
BA101	E-2
BA601	G-2
BA604	D-3
BA901	G-29
BA902	G-29

ADDRESS INFORMATION

CAMERA CIRCUIT BOARD

Transistor	
Q101	C-11 Ⓒ
Q102	C-1 Ⓕ
Q103	C-1 Ⓕ
Q104	C-1 Ⓕ
Q105	D-1 Ⓕ
Q301	B-2 Ⓕ
Q302	B-3 Ⓕ
Q303	B-10 Ⓒ
Q304	B-10 Ⓒ
Q305	B-10 Ⓒ
Q306	B-10 Ⓒ
Q307	B-10 Ⓒ
Q308	C-2 Ⓕ
Q309	B-3 Ⓕ
Q310	B-2 Ⓕ
Q311	B-3 Ⓕ
Q312	B-3 Ⓕ
Q313	B-3 Ⓕ
Q314	B-3 Ⓕ
Q315	B-3 Ⓕ
Q401	A-9 Ⓒ
Q402	A-9 Ⓒ
Q403	A-9 Ⓒ
Q404	A-3 Ⓕ
Q405	A-9 Ⓒ
Q406	A-2 Ⓕ
Q407	A-3 Ⓕ
Q408	B-3 Ⓕ
Q409	A-3 Ⓕ
Q410	B-3 Ⓕ
Q411	A-4 Ⓕ
Q412	A-4 Ⓕ
Q413	A-9 Ⓒ
Q414	A-3 Ⓕ
Q415	A-9 Ⓒ
Q601	A-8 Ⓒ
Q602	B-5 Ⓕ
Q603	B-5 Ⓕ
Q604	B-5 Ⓕ
Q605	A-8 Ⓒ
Q606	B-5 Ⓕ
Q607	A-5 Ⓕ
Q608	B-7 Ⓒ
Q609	C-4 Ⓕ
Q610	C-8 Ⓒ
Q611	C-8 Ⓒ
Q612	B-5 Ⓕ
Q613	C-7 Ⓒ
Q614	C-5 Ⓕ
Q615	C-7 Ⓒ
Q616	C-5 Ⓕ
Q617	B-4 Ⓕ
Q618	B-8 Ⓒ
Q619	B-8 Ⓒ
Q620	B-4 Ⓕ
Q621	B-5 Ⓕ
Q622	B-8 Ⓒ
Q623	B-5 Ⓕ
Q624	B-5 Ⓕ
Q625	B-7 Ⓒ
Q626	B-5 Ⓕ
Q628	A-5 Ⓕ
Q629	A-5 Ⓕ
Q630	B-8 Ⓒ
Q631	C-4 Ⓕ
Q633	B-5 Ⓕ
Q701	A-1 Ⓕ
Q801	B-6 Ⓕ
Q802	B-6 Ⓕ
Q803	A-6 Ⓕ
Q804	A-6 Ⓕ
Q805	A-6 Ⓕ
Q806	A-6 Ⓕ
Q901	B-4 Ⓕ
Q902	B-4 Ⓕ

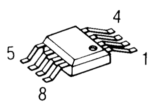
Integrated Circuit	
IC201	C-2 Ⓕ
IC202	C-3 Ⓕ
IC301	C-3 Ⓕ
IC302	B-3 Ⓕ
IC303	C-4 Ⓕ
IC304	B-2 Ⓕ
IC401	A-3 Ⓕ
IC402	A-2 Ⓕ
IC403	B-4 Ⓕ
HIC	B-1 Ⓕ
IC501	B-1 Ⓕ
IC601	B-5 Ⓕ
IC602	B-5 Ⓕ
IC701	A-1 Ⓕ
IC901	A-8 Ⓒ
IC902	B-4 Ⓕ

Test Point	
TP1	B-10 Ⓒ
TP2	C-10 Ⓒ
TP3	B-9 Ⓒ
TP4	B-9 Ⓒ
TP5	B-9 Ⓒ
TP6	B-10 Ⓒ
TP7	A-9 Ⓒ
TP8	A-9 Ⓒ
TP9	A-9 Ⓒ
TP10	B-11 Ⓒ
TP11	C-8 Ⓒ
TP12	C-8 Ⓒ
TP13	B-7 Ⓒ
TP14	A-9 Ⓒ
TP15	B-8 Ⓒ
TP16	B-9 Ⓒ
TP17	A-9 Ⓒ
TP18	B-9 Ⓒ
TP19	A-9 Ⓒ
TP20	A-8 Ⓒ
TP21	C-9 Ⓒ
TP25	B-9 Ⓒ
TP26	A-7 Ⓒ
TP27	A-10 Ⓒ

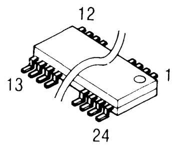
Adjustment	
VR02	D-10 Ⓒ
VR201	C-10 Ⓒ
VR202	B-10 Ⓒ
VR203	B-10 Ⓒ
VR204	C-11 Ⓒ
VR205	C-10 Ⓒ
VR301	C-9 Ⓒ
VR302	B-9 Ⓒ
VR303	C-9 Ⓒ
VR304	B-10 Ⓒ
VR306	C-8 Ⓒ
VR307	C-9 Ⓒ
VR308	C-9 Ⓒ
VR309	B-9 Ⓒ
VR310	C-9 Ⓒ
VR311	C-9 Ⓒ
VR312	C-9 Ⓒ
VR313	C-9 Ⓒ
VR314	B-9 Ⓒ
VR315	B-9 Ⓒ
VR316	B-9 Ⓒ
VR317	C-9 Ⓒ
VR318	B-9 Ⓒ
VR319	B-9 Ⓒ
VR320	B-9 Ⓒ
VR321	B-10 Ⓒ
VR322	A-9 Ⓒ
VR323	B-10 Ⓒ
VR324	B-9 Ⓒ
VR325	B-9 Ⓒ
VR401	A-9 Ⓒ
VR403	A-10 Ⓒ
VR404	B-10 Ⓒ
VR405	A-9 Ⓒ
VR406	A-10 Ⓒ
VR407	B-8 Ⓒ
VR408	B-8 Ⓒ
VR409	B-9 Ⓒ
VR410	B-9 Ⓒ
VR411	A-9 Ⓒ
VR412	A-9 Ⓒ
VR413	B-10 Ⓒ
VR414	A-10 Ⓒ
VR415	A-10 Ⓒ
VR501	B-11 Ⓒ
VR502	B-11 Ⓒ
VR601	B-8 Ⓒ
VR602	B-7 Ⓒ
VR603	A-7 Ⓒ
VR604	B-7 Ⓒ
VR605	B-8 Ⓒ
VR606	B-8 Ⓒ
VR607	C-8 Ⓒ
VR608	B-8 Ⓒ
VR609	B-8 Ⓒ
VR610	B-7 Ⓒ
VR611	B-8 Ⓒ
VR612	A-8 Ⓒ
VR901	A-8 Ⓒ
VR902	A-8 Ⓒ
C103	C-11 Ⓒ
C305	C-8 Ⓒ
C442	A-10 Ⓒ

ADDRESS INFORMATION
Ⓒ ··· COMPONENT SIDE
Ⓕ ··· FOIL SIDE

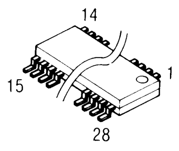
ICs & TRANSISTORs INFORMATION



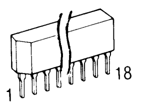
NJM3414M
AN6552S
NJM4556MB
NJM4558M
MN8037S



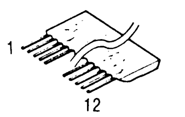
AN2110S
AN2310S
AN2320S
AN2210S



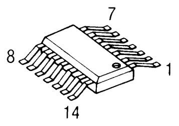
AN2360S



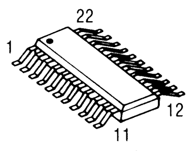
AN2431LF



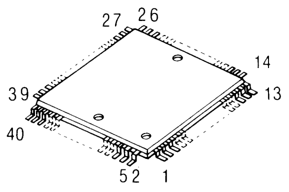
VCR0122



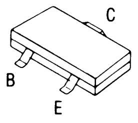
AN6912S



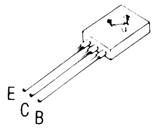
MN6160PBS



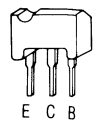
μPD7507G613



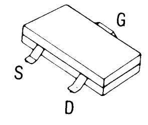
2SA1022
2SC2404
2SD601
2SB709
2SD601A
2SB970
2SD814
2SB792



2SC1567A



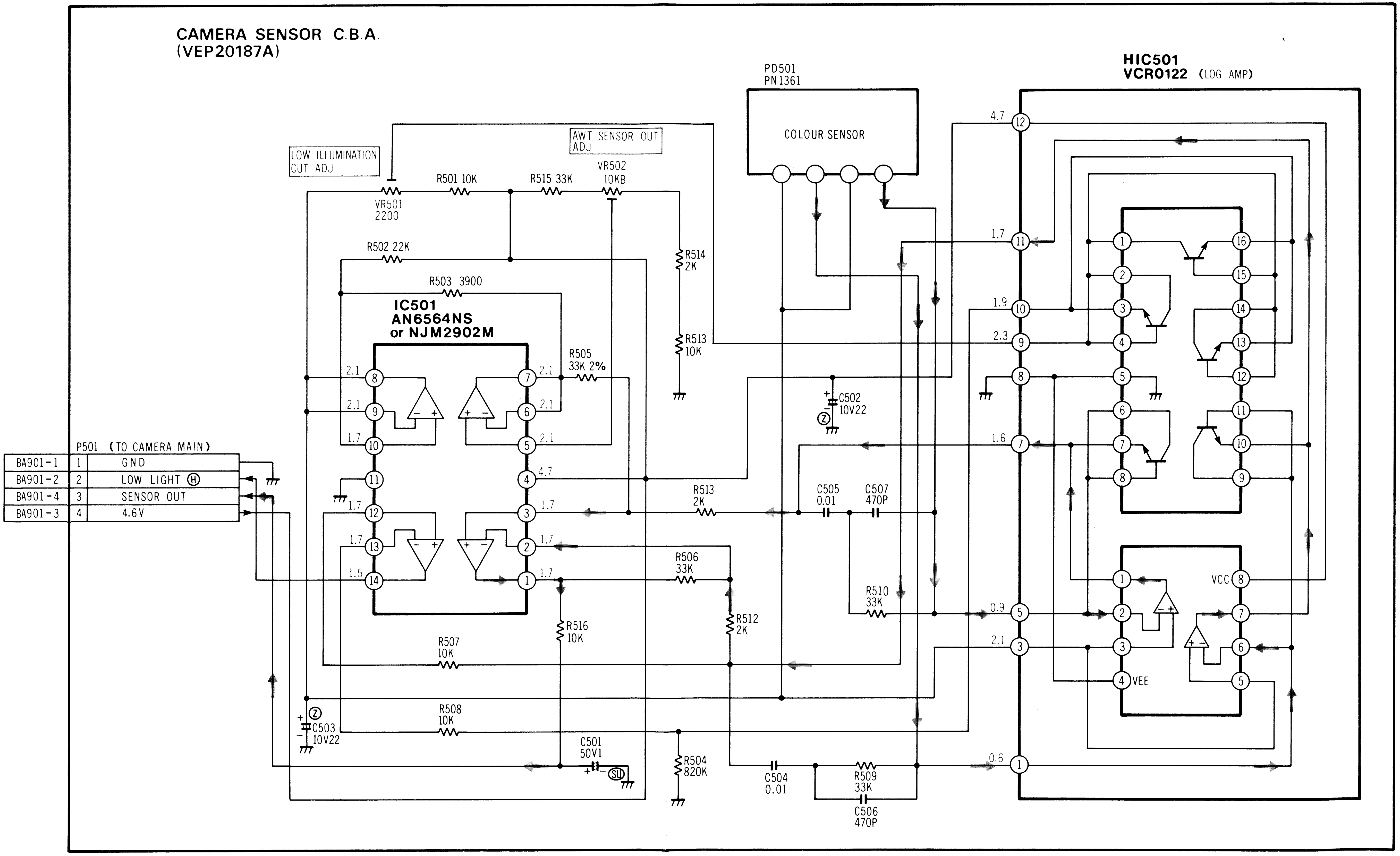
2SB819
2SD1051
2SB641
2SD636



2SK316

3-11. CAMERA SENSOR SCHEMATIC DIAGRAM

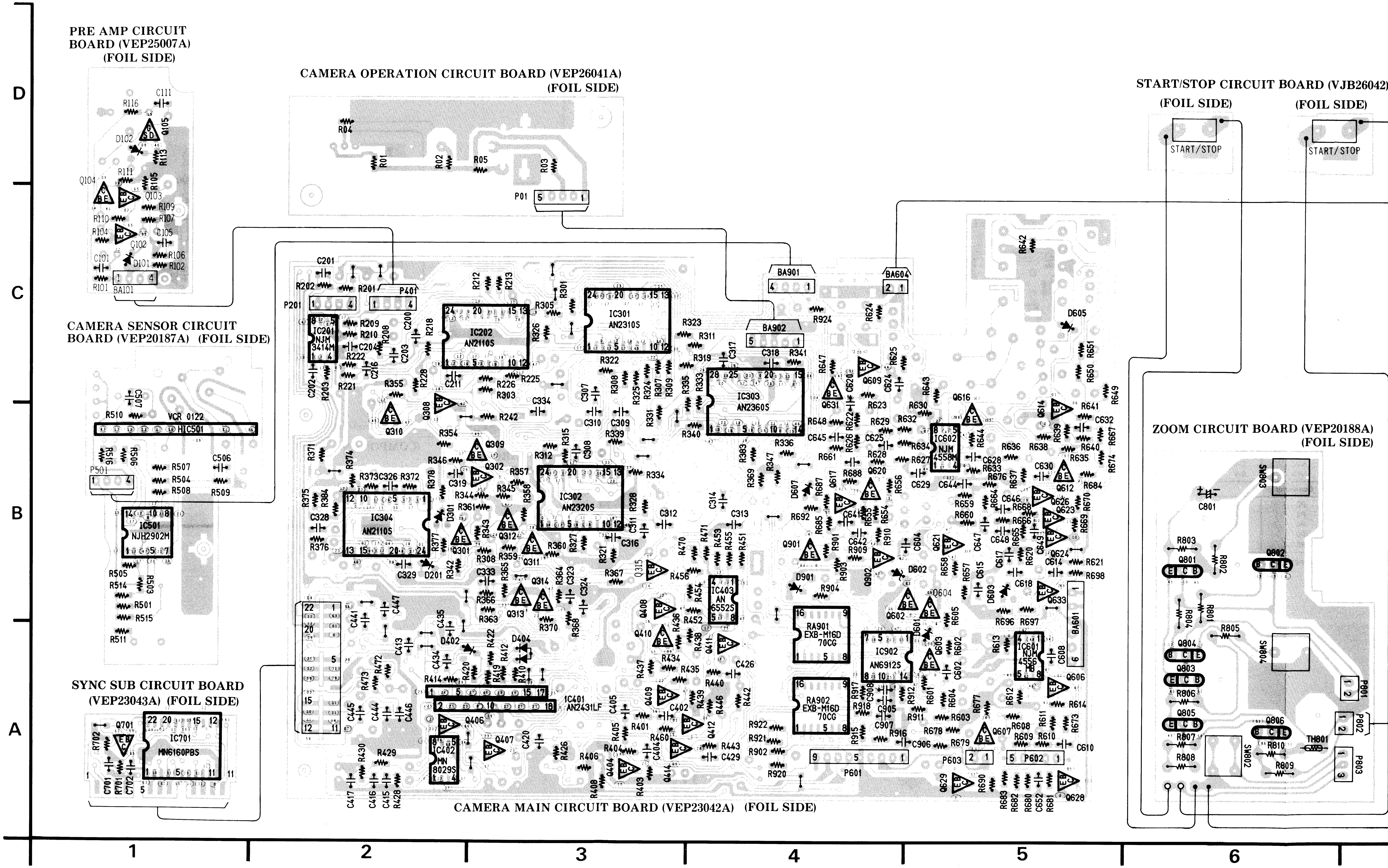
← AWT SENSOR SIGNAL CURRENT FLOW

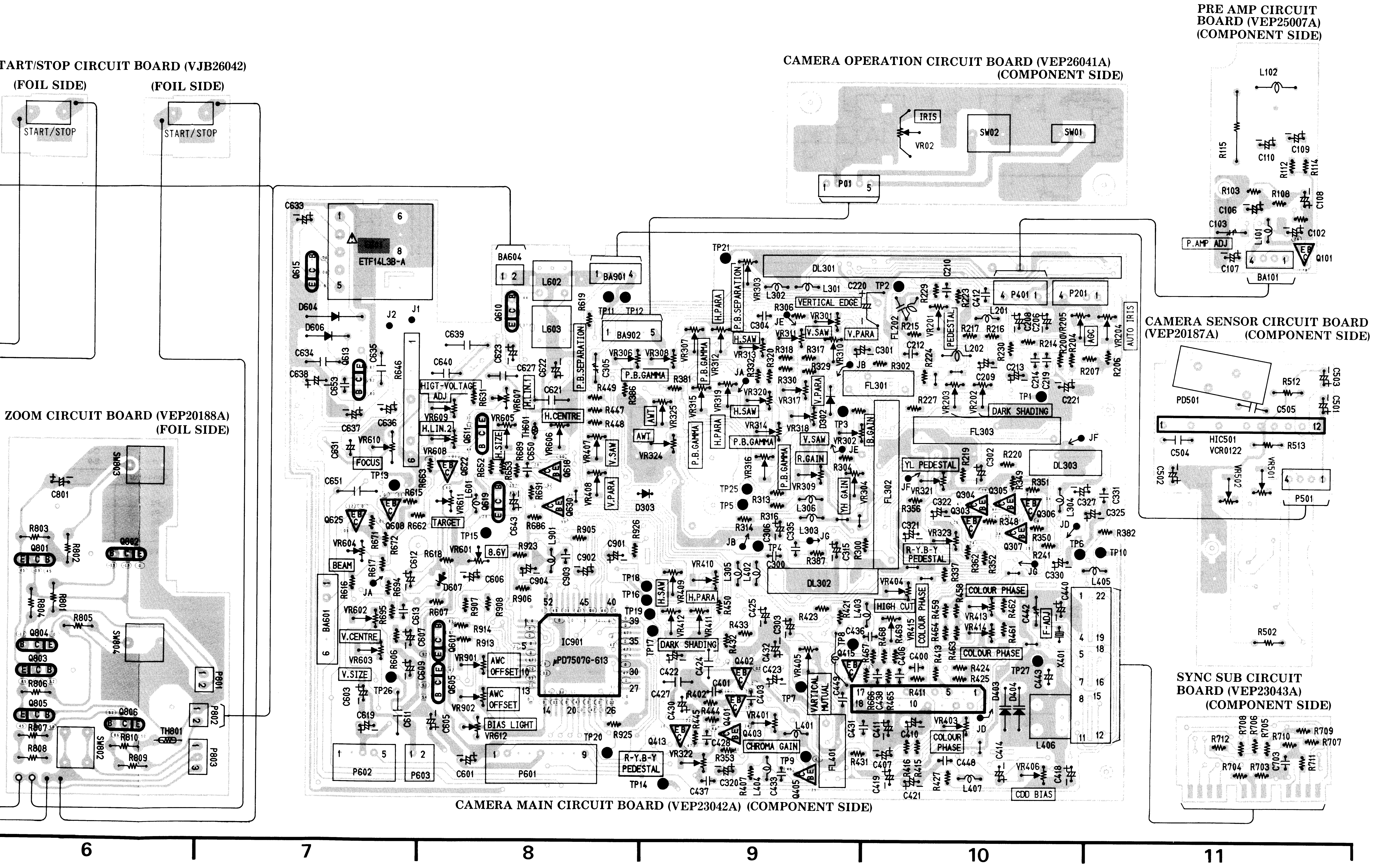

CAMERA SENSOR C.B.A.
(VEP20187A)
PD501
PN1361
COLOUR SENSOR
HIC501
VCR0122 (LOG AMP)
LOW ILLUMINATION CUT ADJ
AWT SENSOR OUT ADJ
VR502
10KB
R501 10K
R515 33K
VR501
2200
R502 22K
R503 3900
R514
2K
R513
10K
IC501
AN6564NS
or NJM2902M
R505
33K 2%
C502
10V22
P501 (TO CAMERA MAIN)
BA901-1
1
GND
BA901-2
2
LOW LIGHT Ⓗ
BA901-4
3
SENSOR OUT
BA901-3
4
4.6V
R513
2K
C505
0.01
C507
470P
R506
33K
R510
33K
R516
10K
R512
2K
R507
10K
R508
10K
C503
10V22
C501
50V1
R504
820K
C504
0.01
R509
33K
C506
470P
VCC
VEE
4.7
1.7
1.9
2.3
1.6
0.9
2.1
0.6
2.1
2.1
1.7
1.7
1.7
1.5
2.1
2.1
2.1
4.7
1.7
1.7
1.7

NOTE: THE MEASUREMENT MODE OF THE DC VOLTAGE ON THIS DIAGRAM IS STOP MODE WITH AIM THE CAMERA AT THE LOGARITHMIC GRAY SCALE CHART.

NOTE: DO NOT USE THE PART NUMBER SHOWN ON THIS DRAWING FOR ORDERING. THE CORRECT PART NUMBER IS SHOWN IN THE PARTS LIST, AND MAY BE SLIGHTLY DIFFERENT OR AMENDED SINCE THIS DRAWING WAS PREPARED.

3-12. CAMERA MAIN CIRCUIT BOARD (VEP23042A)


PRE AMP CIRCUIT BOARD (VEP25007A) (FOIL SIDE)
CAMERA OPERATION CIRCUIT BOARD (VEP26041A) (FOIL SIDE)
START/STOP CIRCUIT BOARD (VJB26042)
(FOIL SIDE)
(FOIL SIDE)
START/STOP
START/STOP
CAMERA SENSOR CIRCUIT BOARD (VEP20187A) (FOIL SIDE)
ZOOM CIRCUIT BOARD (VEP20188A) (FOIL SIDE)
SYNC SUB CIRCUIT BOARD (VEP23043A) (FOIL SIDE)
CAMERA MAIN CIRCUIT BOARD (VEP23042A) (FOIL SIDE)
VCR 0122
HIC501
IC501 NJH2902M
IC201 NJM 3414M
IC202 AN2110S
IC301 AN2310S
IC302 AN2320S
IC303 AN2360S
IC304 AN2110S
IC401 AN2431LF
IC402 MN 8029S
IC403 AN 6552S
IC601 NJM 4556 MB
IC602 NJM 4558M
IC701 MN6160PBS
IC902 AN6912S
RA901 EXB-M16D 70CG
RA902 EXB-M16D 70CG
BA101
BA601
BA604
BA901
BA902
P01
P201
P401
P501
P601
P602
P603
P801
P802
P803
SW802
SW803
SW804
TH801
D
C
B
A
1
2
3
4
5
6



TART/STOP CIRCUIT BOARD (VJB26042)
(FOIL SIDE) (FOIL SIDE)

ZOOM CIRCUIT BOARD (VEP20188A)
(FOIL SIDE)

CAMERA OPERATION CIRCUIT BOARD (VEP26041A)
(COMPONENT SIDE)

PRE AMP CIRCUIT
BOARD (VEP25007A)
(COMPONENT SIDE)

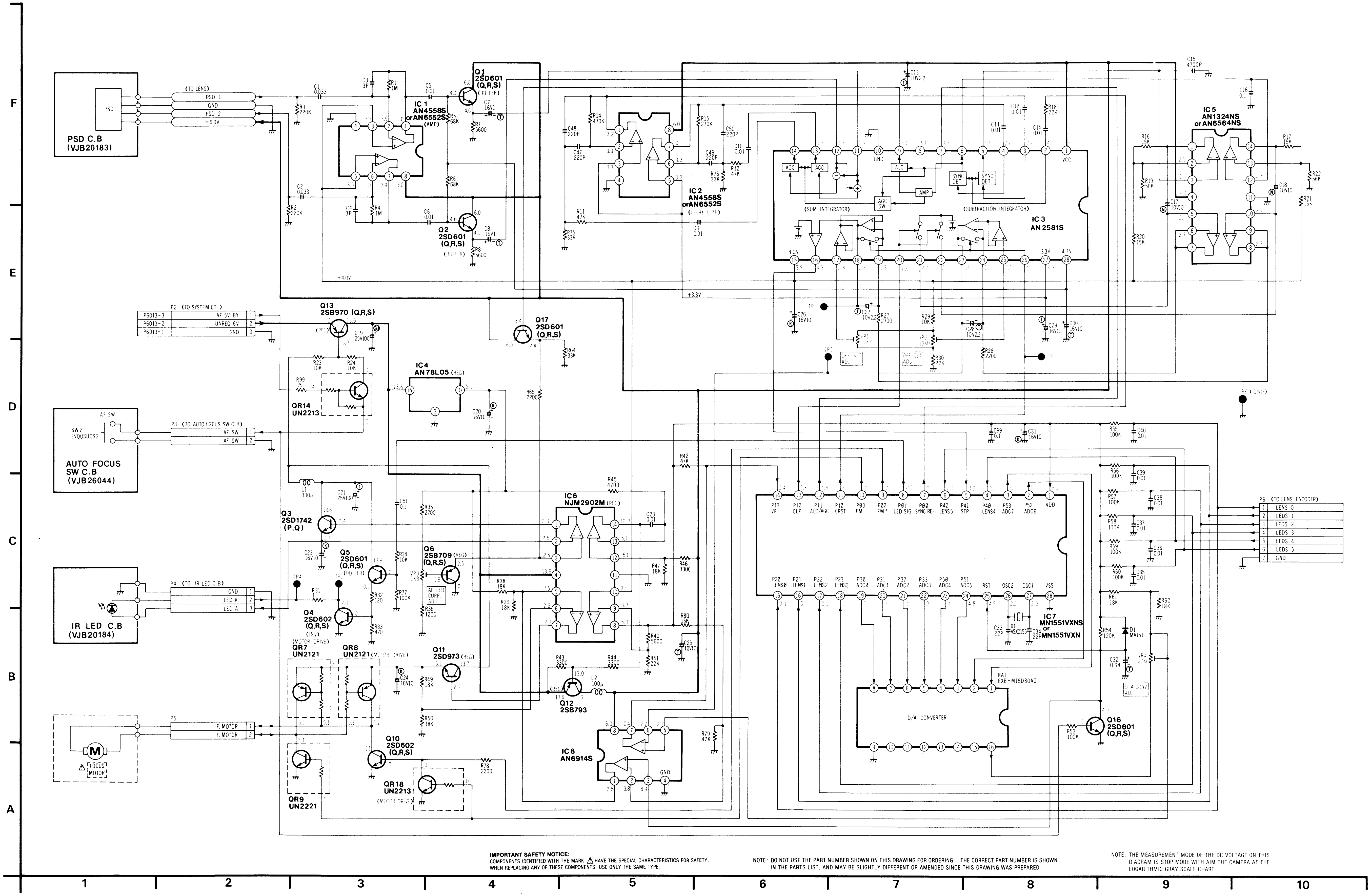
CAMERA SENSOR CIRCUIT BOARD
(VEP20187A) (COMPONENT SIDE)

SYNC SUB CIRCUIT
BOARD (VEP23043A)
(COMPONENT SIDE)

CAMERA MAIN CIRCUIT BOARD (VEP23042A) (COMPONENT SIDE)

START/STOP
START/STOP
IRIS
VR02
SW02
SW01
P01
L102
R115
C110
C109
R112
R114
R103
R108
C108
C106
C103
L101
C102
P.AMP ADJ
C107
BA101
Q101
ETF14L3B-A
BA604
L602
L603
BA901
TP11
TP12
BA902
DL301
P401
P201
AUTO IRIS
AGC
PEDESTAL
VERTICAL EDGE
V.SAW
V.PARA
H.SAW
H.PARA
P.B.SEPARATION
P.B.GAMMA
HIGT-VOLTAGE ADJ
H.LIN.2
H.CENTRE
H.SIZE
V.LIN.1
FOCUS
TARGET
BEAM
8.6V
V.CENTRE
V.SIZE
AWC OFFSET
BIAS LIGHT
AWT
R.GAIN
YH GAIN
B.GAIN
DARK SHADING
FL301
FL302
FL303
DL302
DL303
YL PEDESTAL
R-Y.B-Y PEDESTAL
HIGH CUT
COLOUR PHASE
F-ADJ
VERTICAL MUTUAL
CHROMA GAIN
CDD BIAS
IC901
μPD7507G-613
BA601
P601
P602
P603
P801
P802
P803
SW802
SW803
SW804
TH801
Q801
Q802
Q803
Q804
Q805
Q806
PD501
HIC501
VCR0122
VR501
VR502
P501
R502
R512
R513
C501
C502
C503
C504
C505
R703
R704
R705
R706
R707
R708
R709
R710
R711
R712
C703
L405
L406
X401
6
7
8
9
10
11

3-13. AUTO FOCUS SCHEMATIC DIAGRAM


PSD C.B (VJB20183)
(TO LENS)
PSD 1
GND
PSD 2
+6.0V
AUTO FOCUS SW C.B (VJB26044)
SW2 EVQQSUOSG
AF SW
P3 (TO AUTO FOCUS SW C.B)
IR LED C.B (VJB20184)
P4 (TO IR LED C.B)
LED K
LED A
P5
F. MOTOR
FOCUS MOTOR
P2 (TO SYSTEM CTL)
P6013-3 AF 5V BY
P6013-2 UNREG 6V
P6013-1 GND
IC1 AN4558S or AN6552S (AMP)
Q1 2SD601 (Q,R,S) (BUFFER)
Q2 2SD601 (Q,R,S) (BUFFER)
IC2 AN4558S or AN6552S (TWIN LPF)
IC3 AN2581S
AGC
ALC
SYNC DET
AMP
AGC SW
(SUM INTEGRATOR)
(SUBTRACTION INTEGRATOR)
GND
VCC
IC5 AN1324NS or AN6564NS
Q13 2SB970 (Q,R,S)
Q17 2SD601 (Q,R,S)
IC4 AN78L05 (REG)
QR14 UN2213
Q3 2SD1742 (P,Q)
Q5 2SD601 (Q,R,S)
Q6 2SB709 (REG) (Q,R,S)
Q4 2SD602 (Q,R,S) (INV)
IC6 NJM2902M (REG)
QR7 UN2121 (MOTOR DRIVE)
QR8 UN2121 (MOTOR DRIVE)
Q11 2SD973 (REG)
Q12 2SB793
IC8 AN6914S
Q10 2SD602 (Q,R,S)
QR9 UN2221
QR18 UN2213 (MOTOR DRIVE)
IC7 MN1551VXNS or MN1551VXN
D/A CONVERTER
RA1 EXB-M16D804G
Q16 2SD601 (Q,R,S)
D1 MA151
P6 (TO LENS ENCODER)
LENS 0
LEDS 1
LEDS 2
LEDS 3
LEDS 4
LEDS 5
GND
TP1
TP2
TP3
TP4
TP5
TP6
VR1
VR2
VR3
VR4
+4.0V
+3.3V
F
E
D
C
B
A
1
2
3
4
5
6
7
8
9
10

IMPORTANT SAFETY NOTICE:
COMPONENTS IDENTIFIED WITH THE MARK ⚠ HAVE THE SPECIAL CHARACTERISTICS FOR SAFETY.
WHEN REPLACING ANY OF THESE COMPONENTS, USE ONLY THE SAME TYPE.

NOTE: DO NOT USE THE PART NUMBER SHOWN ON THIS DRAWING FOR ORDERING. THE CORRECT PART NUMBER IS SHOWN IN THE PARTS LIST, AND MAY BE SLIGHTLY DIFFERENT OR AMENDED SINCE THIS DRAWING WAS PREPARED.

NOTE: THE MEASUREMENT MODE OF THE DC VOLTAGE ON THIS DIAGRAM IS STOP MODE WITH AIM THE CAMERA AT THE LOGARITHMIC GRAY SCALE CHART.

AUTO FOCUS SCHEMATIC	
Transistor	
Q1	F-4
Q2	E-4
Q3	C-3
Q4	B-3
Q5	C-3
Q6	C-4
Q10	A-3
Q11	B-4
Q12	B-5
Q13	E-3
Q16	B-9
Q17	E-4
Transistor & Resistor	
QR7	B-3
QR8	B-3
QR9	A-3
QR14	D-3
QR18	A-3
Integrated Circuit	
IC1	F-3
IC2	F-5
IC3	E-8
IC4	D-4
IC5	F-9
IC6	C-5
IC7	B-8
IC8	A-5
Test Point	
TP1	E-6
TP2	D-6
TP3	D-8
TP4	C-3
TP5	C-3
TP6	D-10
Adjustment	
VR1	D-7
VR2	D-7
VR3	C-3
VR4	B-9
Connector	
P2	E-2
P3	D-2
P4	C-2
P5	B-2
P6	C-10

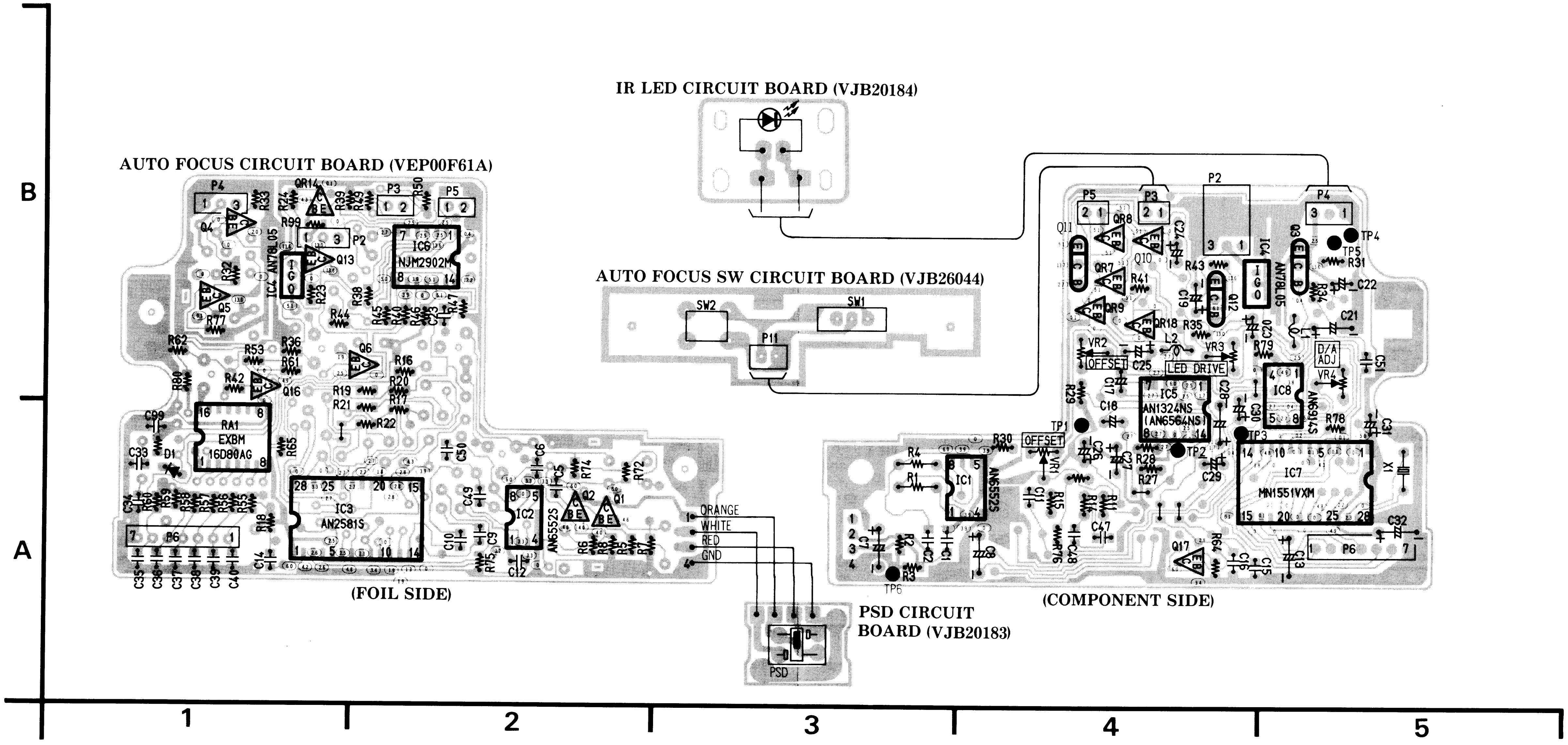
ADDRESS INFORMATION

3-14. AUTO FOCUS CIRCUIT BOARD (VEP00F61A)

AUTO FOCUS SCHEMATIC

Transistor	
Q1	F-4
Q2	E-4
Q3	C-3
Q4	B-3
Q5	C-3
Q6	C-4
Q10	A-3
Q11	B-4
Q12	B-5
Q13	E-3
Q16	B-9
Q17	E-4
Transistor & Resistor	
QR7	B-3
QR8	B-3
QR9	A-3
QR14	D-3
QR18	A-3
Integrated Circuit	
IC1	F-3
IC2	F-5
IC3	E-8
IC4	D-4
IC5	F-9
IC6	C-5
IC7	B-8
IC8	A-5
Test Point	
TP1	E-6
TP2	D-6
TP3	D-8
TP4	C-3
TP5	C-3
TP6	D-10
Adjustment	
VR1	D-7
VR2	D-7
VR3	C-3
VR4	B-9
Connector	
P2	E-2
P3	D-2
P4	C-2
P5	B-2
P6	C-10

ADDRESS INFORMATION

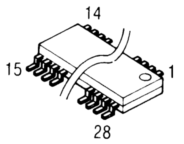

IR LED CIRCUIT BOARD (VJB20184)
AUTO FOCUS CIRCUIT BOARD (VEP00F61A)
AUTO FOCUS SW CIRCUIT BOARD (VJB26044)
SW2
SW1
P11
P2
P3
P4
P5
P6
ORANGE
WHITE
RED
GND
OFFSET
LED DRIVE
D/A ADJ
TP1
TP2
TP3
TP4
TP5
TP6
PSD
PSD CIRCUIT BOARD (VJB20183)
(FOIL SIDE)
(COMPONENT SIDE)
B
A
1
2
3
4
5

AUTO FOCUS CIRCUIT BOARD

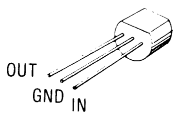
Transistor	
Q1	A-2 Ⓕ
Q2	A-2 Ⓕ
Q3	B-5 Ⓒ
Q4	B-1 Ⓕ
Q5	B-1 Ⓕ
Q6	B-2 Ⓕ
Q10	B-4 Ⓒ
Q11	B-4 Ⓒ
Q12	B-4 Ⓒ
Q13	B-1 Ⓕ
Q16	B-1 Ⓕ
Q17	A-4 Ⓒ
Transistor & Resistor	
QR7	B-4 Ⓒ
QR8	B-4 Ⓒ
QR9	B-4 Ⓒ
QR14	B-1 Ⓕ
QR18	B-4 Ⓒ
Integrated Circuit	
IC1	A-4 Ⓒ
IC2	A-2 Ⓕ
IC3	A-1 Ⓕ
IC4	B-1 Ⓕ
IC4	B-4 Ⓒ
IC5	B-4 Ⓒ
IC6	B-2 Ⓕ
IC7	B-5 Ⓒ
IC8	B-4 Ⓒ
Test Point	
TP1	A-4 Ⓒ
TP2	A-4 Ⓒ
TP3	A-4 Ⓒ
TP4	B-5 Ⓒ
TP5	B-5 Ⓒ
TP6 (GND)	A-3 Ⓒ
Adjustment	
VR1	A-4 Ⓒ
VR2	B-4 Ⓒ
VR3	B-4 Ⓒ
VR4	B-4 Ⓒ

ADDRESS INFORMATION
Ⓒ ··· COMPONENT SIDE
Ⓕ ··· FOIL SIDE

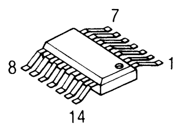
ICs & TRANSISTORs INFORMATION



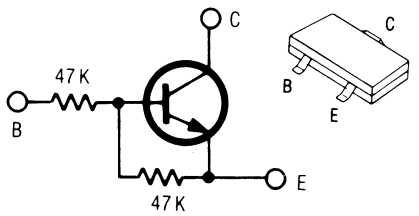
AN2581S
MN1551VXNS



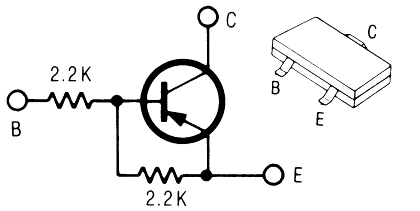
AN78L05



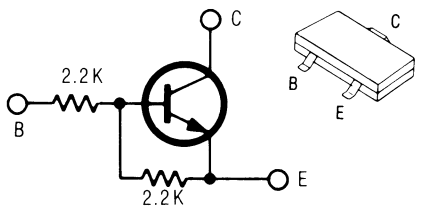
AN1324NS
NJM2902M


47K
C
B
E
47K
C
B
E

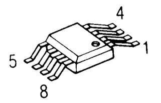
UN2213


2.2K
C
B
E
2.2K
C
B
E

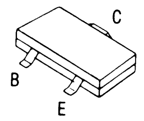
UN2121


2.2K
C
B
E
2.2K
C
B
E

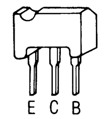
UN2221



AN4558S
AN6914S



2SB709
2SD601
2SD602
2SB970



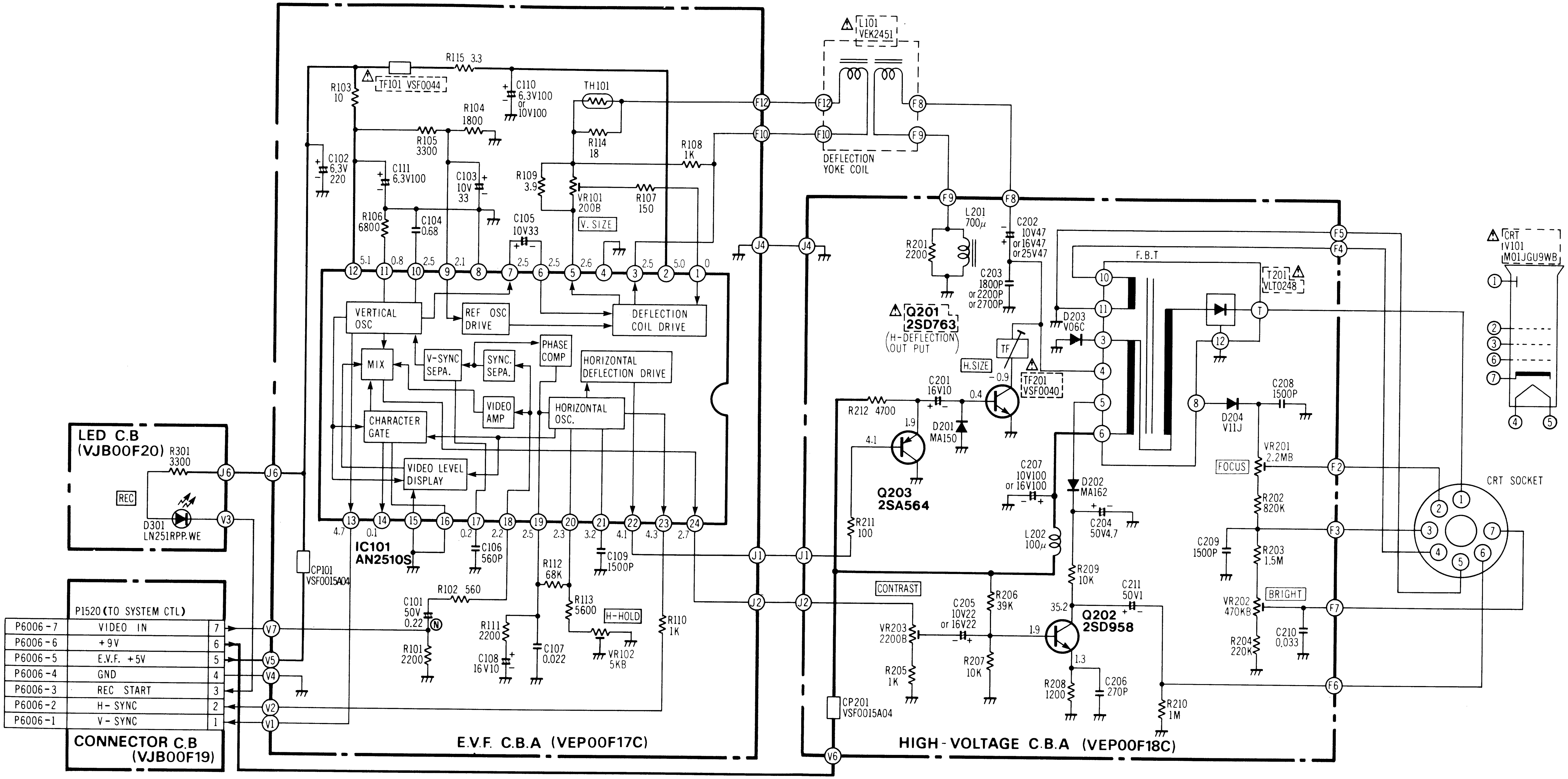
2SD973
2SB793
2SD1742

3-15. ELECTRONIC VIEW FINDER (E.V.F) SCHEMATIC DIAGRAM

3-16

LED

BO

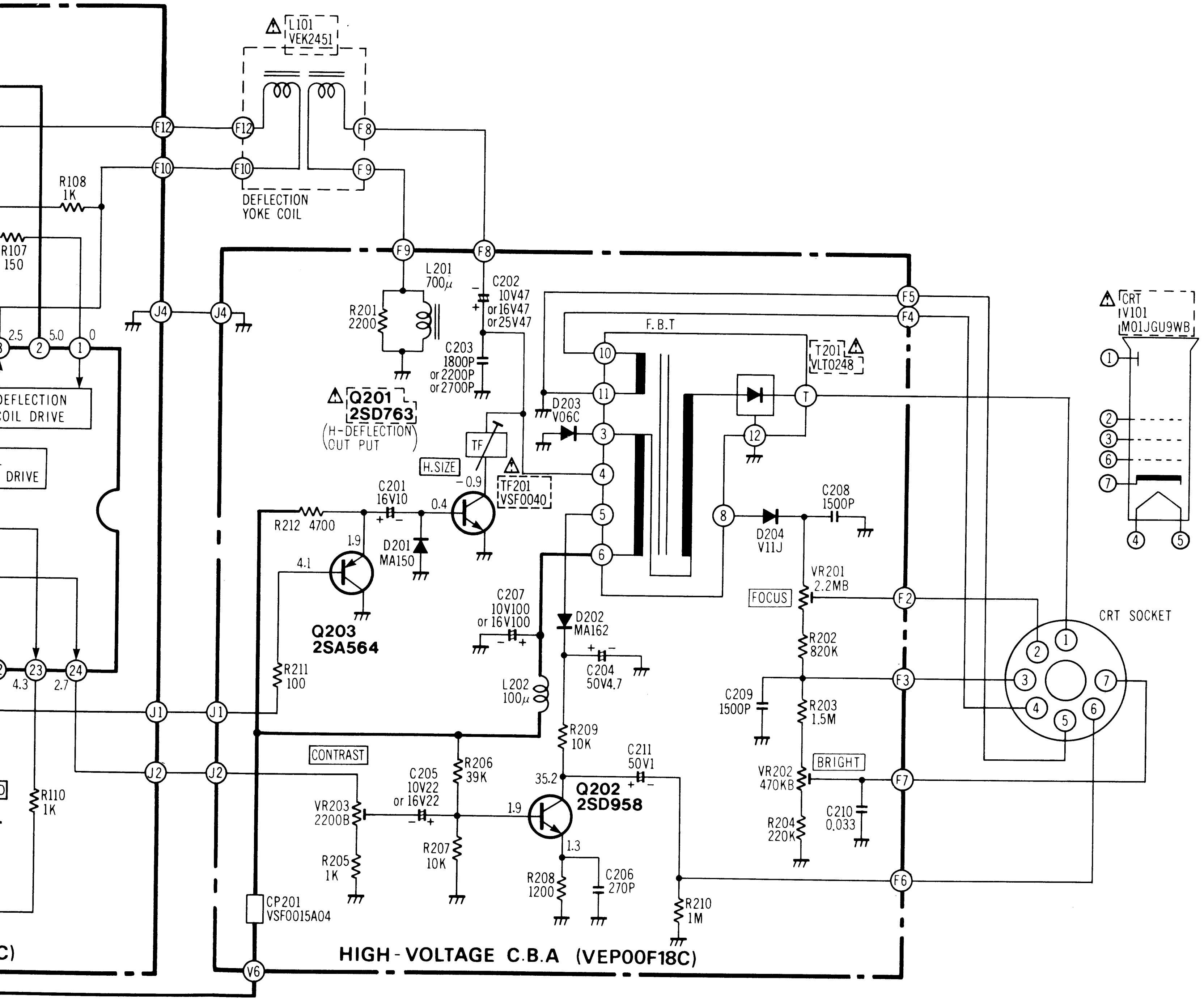

E.V.F. C.B.A (VEP00F17C)
HIGH-VOLTAGE C.B.A (VEP00F18C)
LED C.B (VJB00F20)
CONNECTOR C.B (VJB00F19)
P1520 (TO SYSTEM CTL)
P6006-7 VIDEO IN 7
P6006-6 +9V 6
P6006-5 E.V.F. +5V 5
P6006-4 GND 4
P6006-3 REC START 3
P6006-2 H-SYNC 2
P6006-1 V-SYNC 1
IC101 AN2510S
VERTICAL OSC
REF OSC DRIVE
DEFLECTION COIL DRIVE
MIX
V-SYNC SEPA.
SYNC. SEPA.
PHASE COMP
HORIZONTAL DEFLECTION DRIVE
VIDEO AMP
HORIZONTAL OSC.
CHARACTER GATE
VIDEO LEVEL DISPLAY
L101 VEK2451
DEFLECTION YOKE COIL
TF101 VSF0044
TF201 VSF0040
CP101 VSF0015A04
CP201 VSF0015A04
Q201 2SD763 (H-DEFLECTION OUT PUT)
Q202 2SD958
Q203 2SA564
F.B.T
T201 VLT0248
CRT IV101 M01JGU9WB
CRT SOCKET
D301 LN251RPP.WE
REC
V. SIZE
H-HOLD
H.SIZE
FOCUS
CONTRAST
BRIGHT
TH101
VR101 200B
VR102 5KB
VR201 2.2MB
VR202 470KB
VR203 2200B
D201 MA150
D202 MA162
D203 V06C
D204 V11J
L201 700μ
L202 100μ
R301 3300

NOTE: THE MEASUREMENT MODE OF THE DC VOLTAGE ON THIS DIAGRAM IS STOP MODE WITH AIM THE CAMERA AT THE LOGARITHMIC GRAY SCALE CHART.

NOTE: DO NOT USE THE PART NUMBER SHOWN ON THIS DRAWING FOR ORDERING. THE CORRECT PART NUMBER IS SHOWN IN THE PARTS LIST, AND MAY BE SLIGHTLY DIFFERENT OR AMENDED SINCE THIS DRAWING WAS PREPARED.

IMPORTANT SAFETY NOTICE:
COMPONENTS IDENTIFIED WITH THE MARK ⚠ HAVE THE SPECIAL CHARACTERISTICS FOR SAFETY. WHEN REPLACING ANY OF THESE COMPONENTS, USE ONLY THE SAME TYPE.

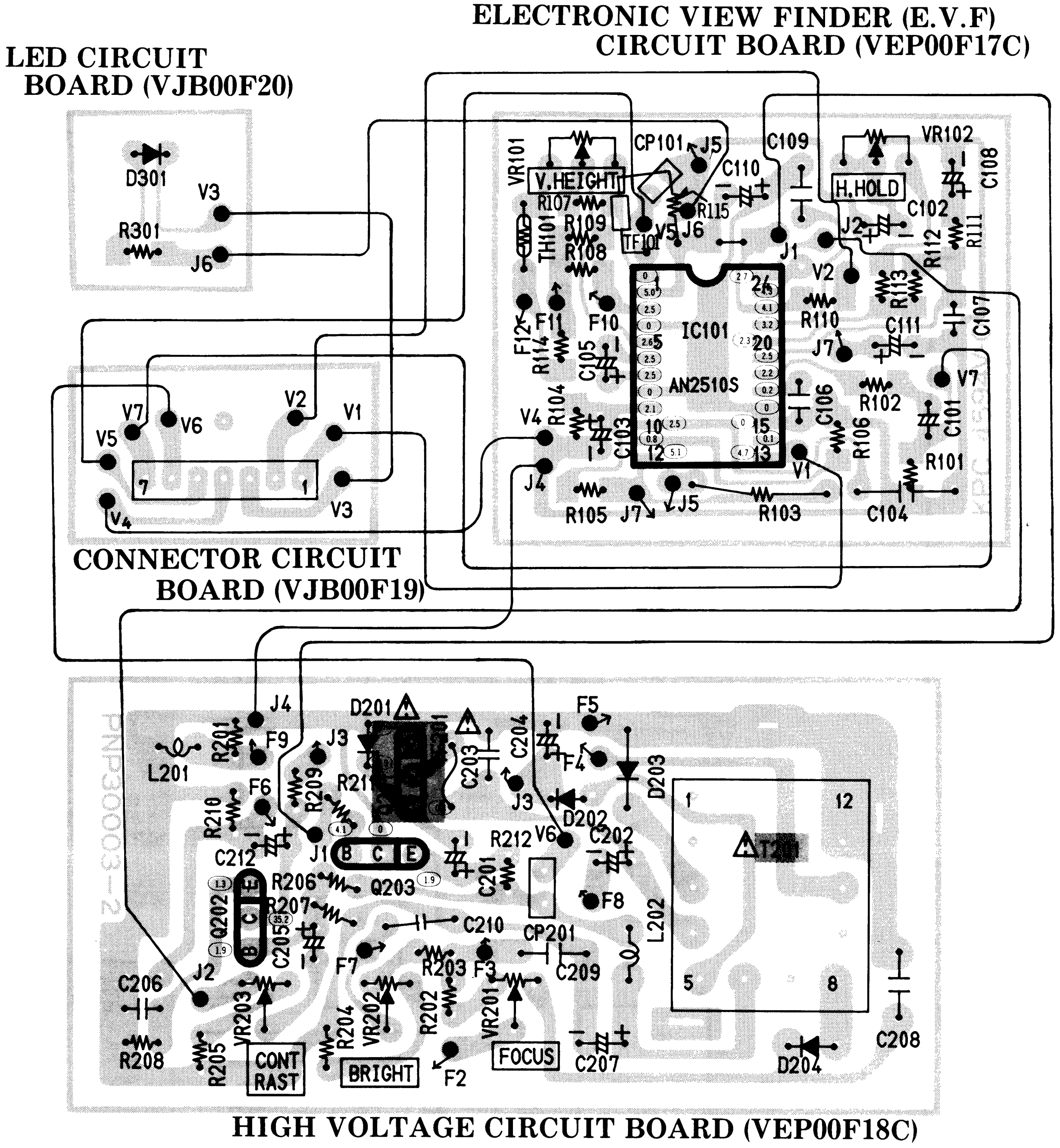
DIAGRAM


L101 VEK2451
DEFLECTION YOKE COIL
R108 1K
R107 150
DEFLECTION COIL DRIVE
DRIVE
L201 700μ
R201 2200
C202 10V47 or 16V47 or 25V47
C203 1800P or 2200P or 2700P
F.B.T
T201 VLT0248
Q201 2SD763 (H-DEFLECTION OUT PUT)
D203 V06C
H.SIZE
TF
TF201 VSF0040
C201 16V10
R212 4700
D201 MA150
Q203 2SA564
R211 100
C207 10V100 or 16V100
D202 MA162
C204 50V4.7
L202 100μ
D204 V11J
C208 1500P
VR201 2.2MB
FOCUS
R202 820K
C209 1500P
R203 1.5M
BRIGHT
VR202 470KB
R204 220K
C210 0.033
CONTRAST
VR203 2200B
C205 10V22 or 16V22
R206 39K
R205 1K
R207 10K
R209 10K
C211 50V1
Q202 2SD958
R208 1200
C206 270P
R210 1M
R110 1K
CP201 VSF0015A04
CRT V101 M01JGU9WB
CRT SOCKET
HIGH-VOLTAGE C.B.A (VEP00F18C)

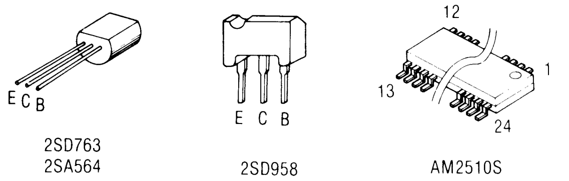
NOTE: DO NOT USE THE PART NUMBER SHOWN ON THIS DRAWING FOR ORDERING. THE CORRECT PART NUMBER IS SHOWN IN THE PARTS LIST, AND MAY BE SLIGHTLY DIFFERENT OR AMENDED SINCE THIS DRAWING WAS PREPARED.

IMPORTANT SAFETY NOTICE:
COMPONENTS IDENTIFIED WITH THE MARK ⚠ HAVE THE SPECIAL CHARACTERISTICS FOR SAFETY. WHEN REPLACING ANY OF THESE COMPONENTS, USE ONLY THE SAME TYPE.

3-16. ELECTRONIC VIEW FINDER (E.V.F) CIRCUIT BOARD (VEP00F17C, VEP00F18C)

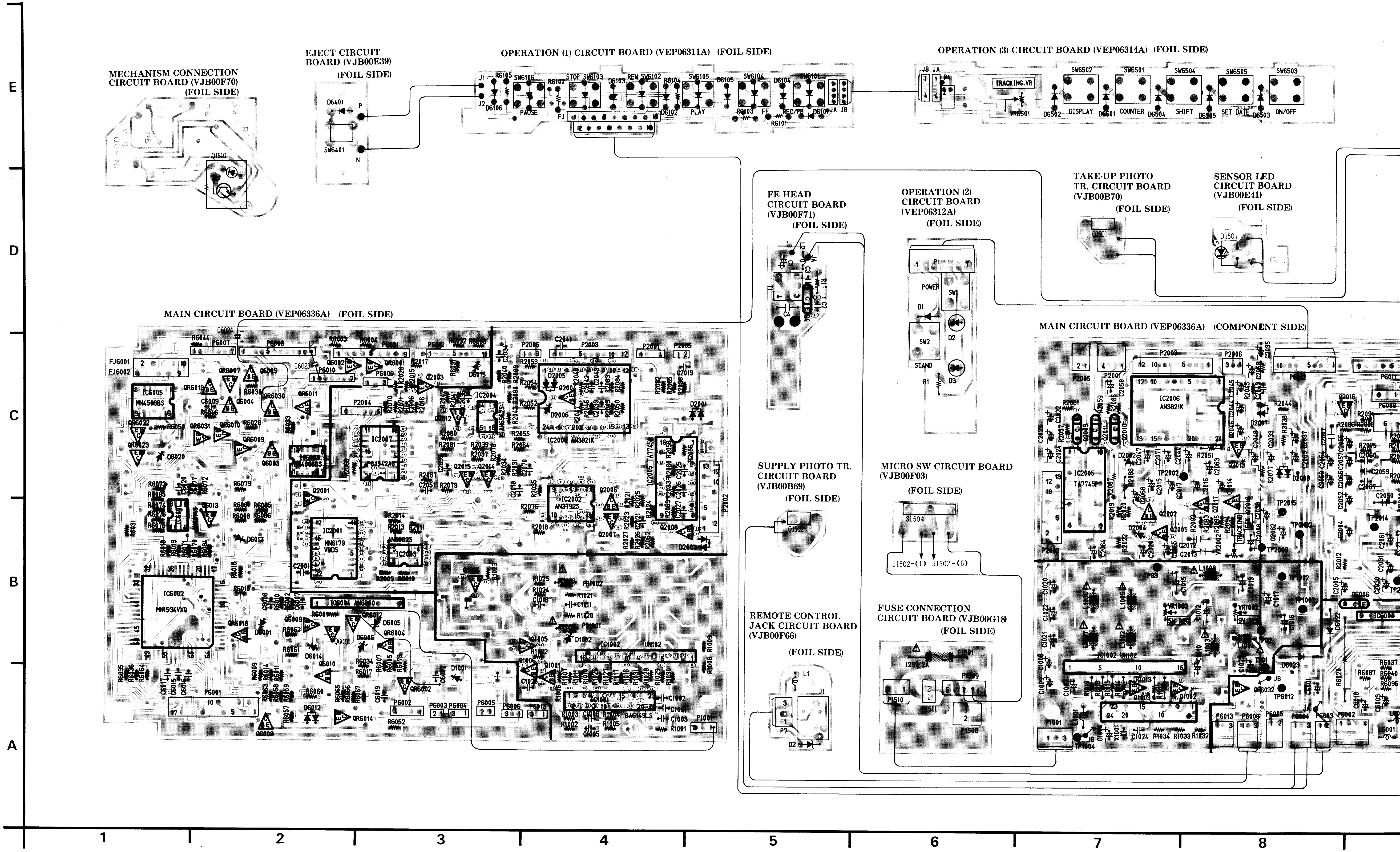

ELECTRONIC VIEW FINDER (E.V.F) CIRCUIT BOARD (VEP00F17C)
LED CIRCUIT BOARD (VJB00F20)
D301
R301
V3
J6
VR101
V.HEIGHT
CP101
J5
C110
C109
VR102
H.HOLD
C108
C102
R111
R112
R107
R109
R108
TH101
TF101
R115
J6
J1
IC101
AN2510S
R110
R113
C111
C107
J7
F12
F11
F10
R114
C105
R104
C103
C106
R102
R106
C101
V7
R101
V4
V5
V6
V2
V1
V3
J4
R105
J7
J5
R103
C104
CONNECTOR CIRCUIT BOARD (VJB00F19)
J4
D201
F5
R201
F9
J3
C203
C204
L201
F6
R209
R211
D203
R210
J3
D202
C212
J1
Q203
R212
V6
C202
C201
R206
R207
Q202
C205
C210
CP201
F8
L202
T201
C206
J2
F7
R203
F3
C209
R208
R205
VR203
CONTRAST
R204
VR202
BRIGHT
R202
VR201
FOCUS
F2
C207
D204
C208
HIGH VOLTAGE CIRCUIT BOARD (VEP00F18C)

ICs & TRANSISTORs INFORMATION

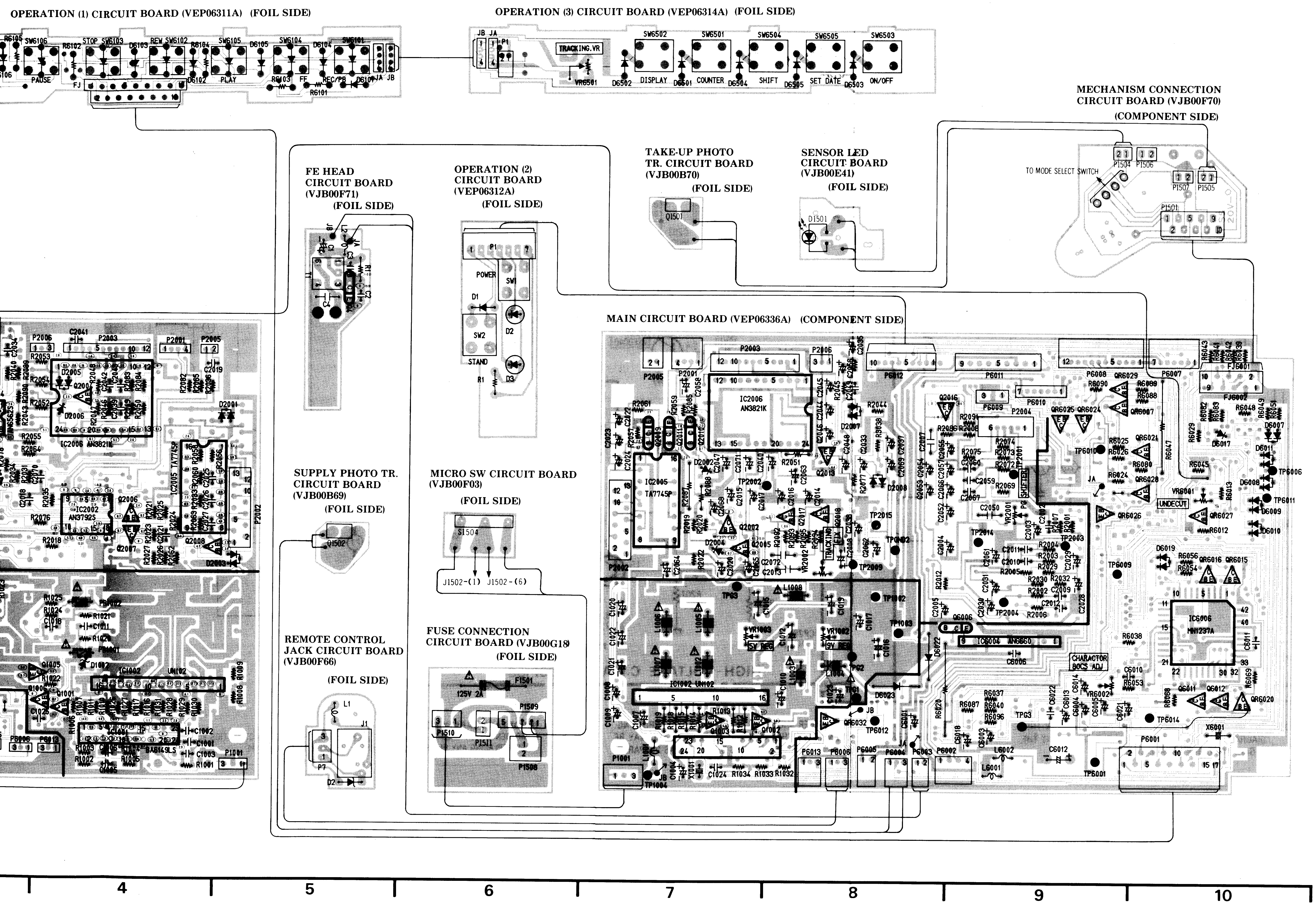

E C B
2SD763
2SA564
E C B
2SD958
12
1
13
24
AM2510S

Next Page:
SYSTEM CONTROL Section

3-17. MAIN CIRCUIT BOARD (VEP06336A) —SYSTEM CONTROL—

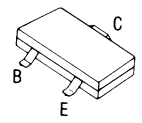

MECHANISM CONNECTION CIRCUIT BOARD (VJB00F70) (FOIL SIDE)
EJECT CIRCUIT BOARD (VJB00E39) (FOIL SIDE)
OPERATION (1) CIRCUIT BOARD (VEP06311A) (FOIL SIDE)
OPERATION (3) CIRCUIT BOARD (VEP06314A) (FOIL SIDE)
FE HEAD CIRCUIT BOARD (VJB00F71) (FOIL SIDE)
OPERATION (2) CIRCUIT BOARD (VEP06312A) (FOIL SIDE)
TAKE-UP PHOTO TR. CIRCUIT BOARD (VJB00B70) (FOIL SIDE)
SENSOR LED CIRCUIT BOARD (VJB00E41) (FOIL SIDE)
MAIN CIRCUIT BOARD (VEP06336A) (FOIL SIDE)
MAIN CIRCUIT BOARD (VEP06336A) (COMPONENT SIDE)
SUPPLY PHOTO TR. CIRCUIT BOARD (VJB00B69) (FOIL SIDE)
MICRO SW CIRCUIT BOARD (VJB00F03) (FOIL SIDE)
REMOTE CONTROL JACK CIRCUIT BOARD (VJB00F66) (FOIL SIDE)
FUSE CONNECTION CIRCUIT BOARD (VJB00G18) (FOIL SIDE)
PAUSE
STOP
REW
PLAY
FF
REC/PB
TRACKING.VR
DISPLAY
COUNTER
SHIFT
SET DATE
ON/OFF
POWER
STAND
J1502-(1)
J1502-(6)
125V 2A
E
D
C
B
A
1
2
3
4
5
6
7
8

M CONTROL—

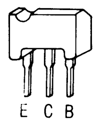

OPERATION (1) CIRCUIT BOARD (VEP06311A) (FOIL SIDE)
OPERATION (3) CIRCUIT BOARD (VEP06314A) (FOIL SIDE)
MECHANISM CONNECTION CIRCUIT BOARD (VJB00F70) (COMPONENT SIDE)
TAKE-UP PHOTO TR. CIRCUIT BOARD (VJB00B70) (FOIL SIDE)
SENSOR LED CIRCUIT BOARD (VJB00E41) (FOIL SIDE)
FE HEAD CIRCUIT BOARD (VJB00F71) (FOIL SIDE)
OPERATION (2) CIRCUIT BOARD (VEP06312A) (FOIL SIDE)
MAIN CIRCUIT BOARD (VEP06336A) (COMPONENT SIDE)
SUPPLY PHOTO TR. CIRCUIT BOARD (VJB00B69) (FOIL SIDE)
MICRO SW CIRCUIT BOARD (VJB00F03) (FOIL SIDE)
REMOTE CONTROL JACK CIRCUIT BOARD (VJB00F66) (FOIL SIDE)
FUSE CONNECTION CIRCUIT BOARD (VJB00G18) (FOIL SIDE)
PAUSE
STOP
REW
PLAY
FF
REC/PB
TRACKING.VR
DISPLAY
COUNTER
SHIFT
SET DATE
ON/OFF
TO MODE SELECT SWITCH
POWER
STAND
J1502-(1)
J1502-(6)
125V 2A
IC2006 AN3821K
IC2005 TA7745P
IC2002 AN3792S
IC6004 AN6560
IC6006 MN1237A
CHARACTOR BOCS ADJ
UNDECUT
4
5
6
7
8
9
10

SYSTEM CONTROL CIRCUIT BOARD	
Transistor	
Q4	B-5 Ⓕ
Q1501	D-7 Ⓕ
Q1502	B-5 Ⓕ
Q1510	F-2 Ⓕ
Q6001	B-2 Ⓕ
Q6002	C-2 Ⓕ
Q6003	C-2 Ⓕ
Q6004	C-2 Ⓕ
Q6005	C-2 Ⓕ
Q6006	B-9 Ⓒ
Q6007	C-2 Ⓕ
Q6008	A-2 Ⓕ
Q6009	B-2 Ⓕ
Q6010	A-2 Ⓕ
Q6011	B-10 Ⓒ
Q6012	B-10 Ⓒ
Q6013	B-2 Ⓕ
Transistor & Resistor	
QR6001	C-3 Ⓕ
QR6002	A-3 Ⓕ
QR6004	B-3 Ⓕ
QR6007	C-9 Ⓒ
QR6009	C-2 Ⓕ
QR6010	C-2 Ⓕ
QR6011	C-2 Ⓕ
QR6012	B-3 Ⓕ
QR6013	C-2 Ⓕ
QR6014	A-2 Ⓕ
QR6015	B-10 Ⓒ
QR6016	B-10 Ⓒ
QR6018	B-2 Ⓕ
QR6020	B-10 Ⓒ
QR6021	C-10 Ⓒ
QR6022	C-1 Ⓕ
QR6023	C-1 Ⓕ
QR6024	C-9 Ⓒ
QR6025	C-9 Ⓒ
QR6026	C-9 Ⓒ
QR6027	C-10 Ⓒ
QR6028	C-10 Ⓒ
QR6029	C-9 Ⓒ
QR6030	C-2 Ⓕ
QR6031	C-2 Ⓕ
QR6032	A-8 Ⓒ
Integrated Circuit	
IC6001	B-1 Ⓕ
IC6002	B-1 Ⓕ
IC6003	C-2 Ⓕ
IC6004	B-9 Ⓒ
IC6004	B-2 Ⓕ
IC6005	C-1 Ⓕ
IC6006	B-10 Ⓒ
Test Point	
TP6001	A-9 Ⓒ
TP6006	C-10 Ⓒ
TP6009	B-9 Ⓒ
TP6010	C-9 Ⓒ
TP6011	C-10 Ⓒ
TP6012	A-8 Ⓒ
TP6014	A-10 Ⓒ
TP GND	B-7 Ⓒ
TP GND2	B-8 Ⓒ
TP GND3	A-9 Ⓒ
Adjustment	
VR6001	C-10 Ⓒ
VR6002	B-9 Ⓒ
VR6501	E-6 Ⓕ

ADDRESS INFORMATION
Ⓒ … COMPONENT SIDE
Ⓕ … FOIL SIDE

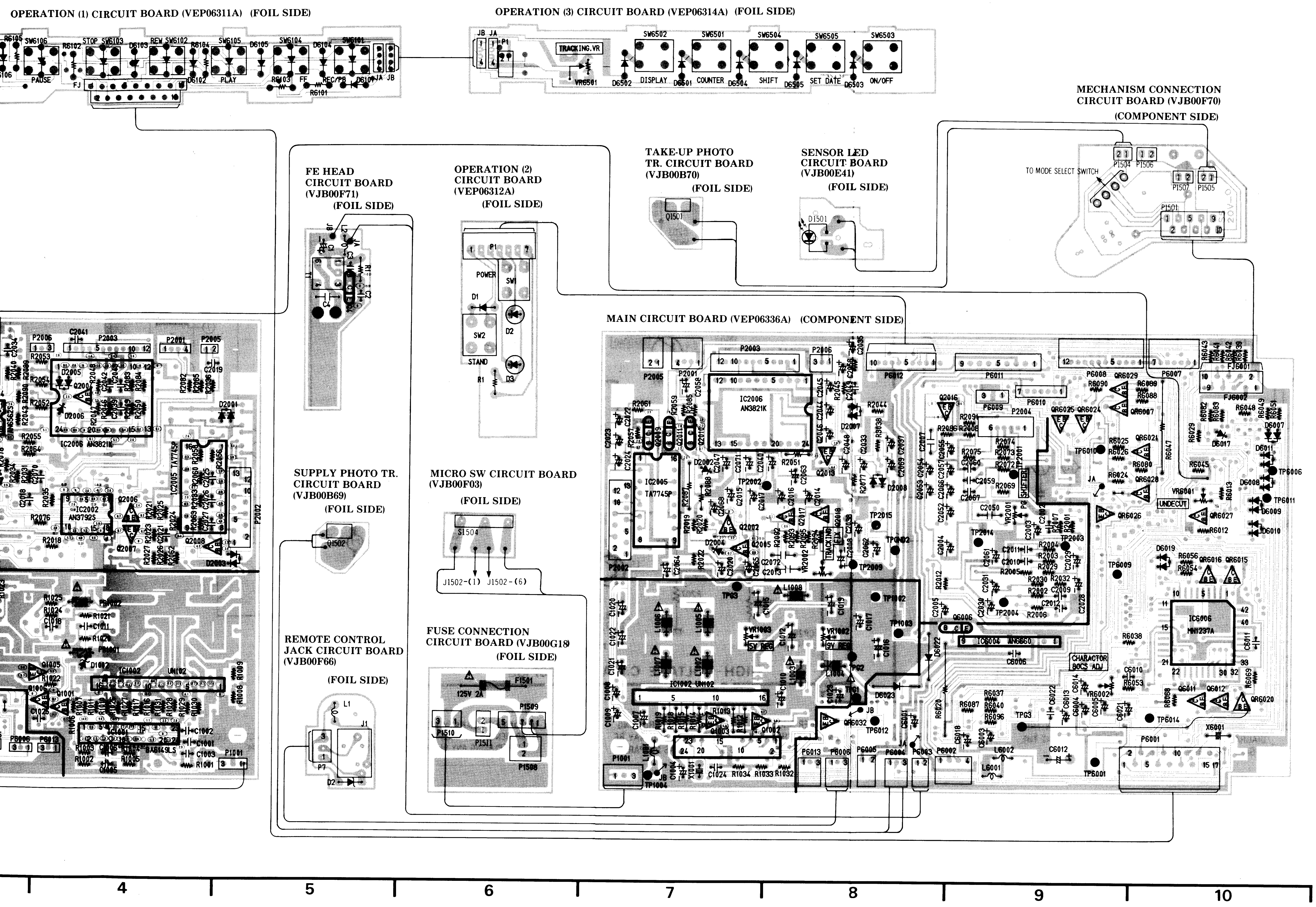


2SD602
2SD601
2SB710
2SB709
2SB779



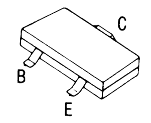
2SD636

M CONTROL—

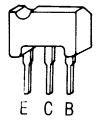

OPERATION (1) CIRCUIT BOARD (VEP06311A) (FOIL SIDE)
OPERATION (3) CIRCUIT BOARD (VEP06314A) (FOIL SIDE)
MECHANISM CONNECTION CIRCUIT BOARD (VJB00F70)
(COMPONENT SIDE)
TO MODE SELECT SWITCH
FE HEAD CIRCUIT BOARD (VJB00F71)
(FOIL SIDE)
OPERATION (2) CIRCUIT BOARD (VEP06312A)
(FOIL SIDE)
TAKE-UP PHOTO TR. CIRCUIT BOARD (VJB00B70)
(FOIL SIDE)
SENSOR LED CIRCUIT BOARD (VJB00E41)
(FOIL SIDE)
MAIN CIRCUIT BOARD (VEP06336A) (COMPONENT SIDE)
SUPPLY PHOTO TR. CIRCUIT BOARD (VJB00B69)
(FOIL SIDE)
MICRO SW CIRCUIT BOARD (VJB00F03)
(FOIL SIDE)
J1502-(1)
J1502-(6)
REMOTE CONTROL JACK CIRCUIT BOARD (VJB00F66)
(FOIL SIDE)
FUSE CONNECTION CIRCUIT BOARD (VJB00G18)
(FOIL SIDE)
125V 2A
PAUSE
STOP
REW
PLAY
FF
REC/PB
TRACKING.VR
DISPLAY
COUNTER
SHIFT
SET DATE
ON/OFF
POWER
STAND
TRACKING
CHARACTOR BOCS ADJ
UNDECUT
4
5
6
7
8
9
10

SYSTEM CONTROL CIRCUIT BOARD	
Transistor	
Q4	B-5 Ⓕ
Q1501	D-7 Ⓕ
Q1502	B-5 Ⓕ
Q1510	F-2 Ⓕ
Q6001	B-2 Ⓕ
Q6002	C-2 Ⓕ
Q6003	C-2 Ⓕ
Q6004	C-2 Ⓕ
Q6005	C-2 Ⓕ
Q6006	B-9 Ⓒ
Q6007	C-2 Ⓕ
Q6008	A-2 Ⓕ
Q6009	B-2 Ⓕ
Q6010	A-2 Ⓕ
Q6011	B-10 Ⓒ
Q6012	B-10 Ⓒ
Q6013	B-2 Ⓕ
Transistor & Resistor	
QR6001	C-3 Ⓕ
QR6002	A-3 Ⓕ
QR6004	B-3 Ⓕ
QR6007	C-9 Ⓒ
QR6009	C-2 Ⓕ
QR6010	C-2 Ⓕ
QR6011	C-2 Ⓕ
QR6012	B-3 Ⓕ
QR6013	C-2 Ⓕ
QR6014	A-2 Ⓕ
QR6015	B-10 Ⓒ
QR6016	B-10 Ⓒ
QR6018	B-2 Ⓕ
QR6020	B-10 Ⓒ
QR6021	C-10 Ⓒ
QR6022	C-1 Ⓕ
QR6023	C-1 Ⓕ
QR6024	C-9 Ⓒ
QR6025	C-9 Ⓒ
QR6026	C-9 Ⓒ
QR6027	C-10 Ⓒ
QR6028	C-10 Ⓒ
QR6029	C-9 Ⓒ
QR6030	C-2 Ⓕ
QR6031	C-2 Ⓕ
QR6032	A-8 Ⓒ
Integrated Circuit	
IC6001	B-1 Ⓕ
IC6002	B-1 Ⓕ
IC6003	C-2 Ⓕ
IC6004	B-9 Ⓒ
IC6004	B-2 Ⓕ
IC6005	C-1 Ⓕ
IC6006	B-10 Ⓒ
Test Point	
TP6001	A-9 Ⓒ
TP6006	C-10 Ⓒ
TP6009	B-9 Ⓒ
TP6010	C-9 Ⓒ
TP6011	C-10 Ⓒ
TP6012	A-8 Ⓒ
TP6014	A-10 Ⓒ
TP GND	B-7 Ⓒ
TP GND2	B-8 Ⓒ
TP GND3	A-9 Ⓒ
Adjustment	
VR6001	C-10 Ⓒ
VR6002	B-9 Ⓒ
VR6501	E-6 Ⓕ

ADDRESS INFORMATION
Ⓒ ··· COMPONENT SIDE
Ⓕ ··· FOIL SIDE



2SD602
2SD601
2SB710
2SB709
2SB779

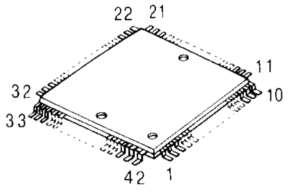


2SD636

SYSTEM CONTROL TRANSISTORs VOLTAGE CHART

REF. NO.	Q6001			Q6002			Q6003			Q6004			Q6005			Q6006		
MODE	E	C	B	E	C	B	E	C	B	E	C	B	E	C	B	E	C	B
STOP	13.9	10.4	13.9	4.9	5.2	0.4	5.1	5.0	4.4	9.4	9.4	8.6	9.3	0	9.4	6.4	14.0	7.1
PLAY	13.9	10.4	13.9	0	5.2	0.2	5.1	5.0	4.4	9.4	9.4	8.6	9.3	0	9.4	6.9	14.0	7.6
REC	13.9	10.4	13.9	4.9	5.2	0.1	5.1	0.2	5.2	9.4	8.4	9.2	9.3	9.1	8.4	7.9	14.0	7.6
F.F	13.9	10.4	13.9	4.9	5.2	0.4	5.1	5.0	4.4	9.4	9.4	8.6	9.3	0	9.4	6.4	14.0	7.1
REW	13.9	10.4	13.9	4.9	5.2	0.4	5.1	5.0	4.4	9.4	9.4	8.6	9.3	0	9.4	6.4	14.0	7.1
REF. NO.	Q6007			Q6008			Q6009			Q6010			Q6011			Q6012		
MODE	E	C	B	E	C	B	E	C	B	E	C	B	E	C	B	E	C	B
STOP	−0.2	14.0	0	5.2	5.2	4.5	0	5.1	0	0	0.1	0.7	12.2	0	10.3	0	10.3	0
PLAY	0	14.0	0.1	5.2	5.2	4.5	0	5.1	0	0	0	0.7	12.2	0	10.3	0	10.3	0
REC	0	14.0	0	5.2	5.2	4.5	0	5.1	0	0	0.1	0.7	12.2	0	10.3	0	10.3	0
F.F	2.0	14.0	2.1	5.2	5.2	4.5	0	5.1	0	0	0.1	0.7	12.2	0	10.3	0	10.3	0
REW	2.0	14.0	2.2	5.2	5.2	4.5	0	5.1	0	0	0.1	0.7	12.2	0	10.3	0	10.3	0
REF. NO.	Q6013																	
MODE	E	C	B															
STOP	0	4.0	0															
PLAY	0	4.0	0															
REC	0	4.0	0															
F.F	0	4.0	0															
REW	0	4.0	0															
REF. NO.	QR6001			QR6002			QR6004			QR6007			QR6009			QR6010		
MODE	E	C	B	E	C	B	E	C	B	E	C	B	E	C	B	E	C	B
STOP	4.9	0	4.9	0	0.1	5.9	0	0	14.2	0	0.1	4.1	5.1	5.1	0	0	0	4.9
PLAY	0	0	0	0	0.1	5.9	0	0	14.2	0	0.1	4.1	5.1	0	5.1	0	5.1	0
REC	4.9	0	4.9	0	0.1	5.9	0	0	14.2	0	5.2	0.2	5.1	5.1	0	0	0	4.9
F.F	4.9	0	4.9	0	0.1	5.9	0	0	14.2	0	0.1	4.1	5.1	5.1	0	0	0	4.9
REW	4.9	0	4.9	0	0.1	5.9	0	0	14.2	0	0.1	4.1	5.1	5.1	0	0	0	4.9
REF. NO.	QR6011			QR6012			QR6013			QR6014			QR6015			QR6016		
MODE	E	C	B	E	C	B	E	C	B	E	C	B	E	C	B	E	C	B
STOP	0	9.3	0.1	0	0	5.0	9.3	0	9.3	5.2	0	5.2	0	0	0	0	0	0
PLAY	0	9.3	0.1	0	2.5	0	9.3	0	9.3	5.2	0	5.2	0	0	0	0	0	0
REC	0	9.3	0.1	0	2.5	0.1	9.3	0	9.3	5.2	5.2	0.1	0	0	2.8	0	0.4	0
F.F	0	9.3	0.1	0	0.1	5.0	9.3	2.1	8.1	5.2	0	5.2	0	0	0	0	0	0
REW	0	9.3	0.1	0	0	5.0	9.3	2.2	8.1	5.2	0	5.2	0	0	0	0	0	0
REF. NO.	QR6018			QR6020			QR6021			QR6022			QR6023			QR6024		
MODE	E	C	B	E	C	B	E	C	B	E	C	B	E	C	B	E	C	B
STOP	0	5.1	0	0	0	5.1	0	0	4.0	5.1	5.1	5.2	5.1	5.1	5.2	0	0	4.9
PLAY	0	5.1	0	0	0	5.1	0	0	4.0	5.1	5.1	5.2	5.1	5.1	5.2	0	3.7	0
REC	0	5.1	0	0	0	5.1	0	0	4.0	4.4	4.4	5.2	4.7	4.7	5.2	0	0	4.9
F.F	0	5.1	0	0	0	5.1	0	0	4.0	5.1	5.1	5.2	5.1	5.1	5.2	0	0	4.9
REW	0	5.1	0	0	0	5.1	0	0	4.0	5.1	5.1	5.2	5.1	5.1	5.2	0	0	4.9
REF. NO.	QR6025			QR6026			QR6027			QR6028			QR6029			QR6030		
MODE	E	C	B	E	C	B	E	C	B	E	C	B	E	C	B	E	C	B
STOP	0	0.1	0	0	0.1	5.9	3.0	4.8	0.1	0	5.2	0	0	3.8	0	0	0	3.8
PLAY	0	0.1	3.7	0	0.1	5.9	5.0	4.8	0.1	0	0	5.0	0	0.1	1.6	0	5.2	0.1
REC	0	0.1	0	0	0.1	5.9	2.7	4.8	0.1	0	5.2	0	0	3.8	0	0	0	3.8
F.F	0	0.1	0	0	0.1	5.9	3.0	4.8	0.1	0	5.2	0	0	3.8	0	0	0	3.8
REW	0	0.1	0	0	0.1	5.9	3.0	4.8	0.1	0	5.2	0	0	3.8	0	0	0	3.8
REF. NO.	QR6031																	
MODE	E	C	B															
STOP	3.8	5.2	5.1															
PLAY	0	5.2	0															
REC	3.8	5.2	5.1															
F.F	3.8	5.2	5.1															
REW	3.8	5.2	5.1															

ICs & TRANSISTORs INFORMATION



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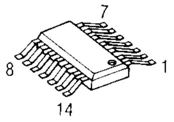
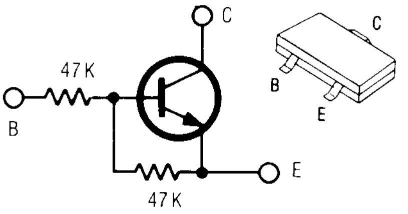
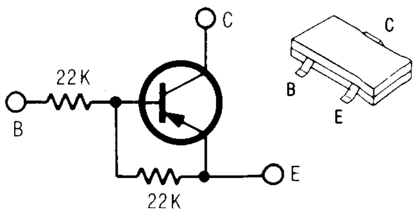


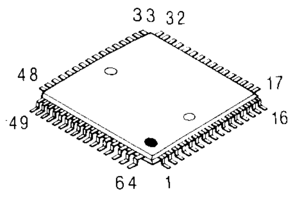
MN4066BS



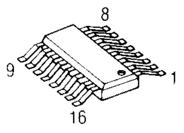
UN2213



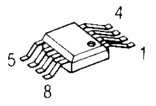
UN2112



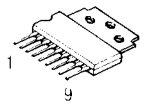
MN1534VXQ



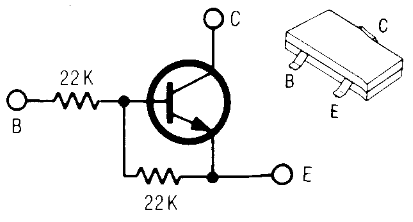
MN4503BS



AN6914S



AN6660



UN2212

SYSTEM CONTROL ICs VOLTAGE CHART

REF. NO.	IC6001																			
MODE	1	2	3	4	5	6	7	8												
STOP	2.6	4.1	5.0	0	0.7	0	4.9	13.9												
PLAY	2.6	4.4	5.0	0	0.7	0	4.9	13.9												
REC	2.6	4.1	5.0	0	0.7	0	4.9	13.9												
F.F	2.6	4.1	5.0	0	0.7	0	4.9	13.9												
REW	2.6	4.1	5.0	0	0.7	0	4.9	13.9												

REF. NO.	IC6002																			
MODE	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20
STOP	5.1	4.6	5.1	5.1	0	0.3	0	5.1	3.1	5.1	5.1	0	4.1	2.1	0.4	5.2	2.6	4.5	5.1	5.1
PLAY	5.1	4.6	0	5.1	0	0.3	0	5.1	3.1	5.1	5.1	2.1	—	2.1	0.1	5.2	2.6	4.5	5.1	5.1
REC	4.7	4.3	5.1	4.8	0	0.3	0	5.1	3.1	5.1	5.1	2.1	—	2.1	0.2	5.2	2.6	4.5	4.4	4.5
F.F	5.1	4.6	5.1	5.1	0	0.3	0	5.1	3.1	5.1	5.1	0	2.0	2.1	0.3	5.2	2.6	4.5	5.1	5.1
REW	5.1	4.6	5.1	5.1	0	0.3	0	5.1	3.1	5.1	5.1	0	2.0	2.1	0.3	5.2	2.6	4.5	5.1	5.1

REF. NO.	IC6002																			
MODE	21	22	23	24	25	26	27	28	29	30	31	32	33	34	35	36	37	38	39	40
STOP	3.0	3.1	5.1	5.1	0	0	5.1	5.1	4.9	0	9.3	4.1	0	9.2	0	5.1	2.1	5.1	5.1	0
PLAY	5.0	5.0	5.1	5.1	0	0	0	0	0	0	9.3	4.1	0	9.2	0	5.1	0	0	5.1	5.1
REC	2.7	2.7	5.1	5.1	2.7	0.4	5.1	0.1	4.9	0.1	0.7	0.2	0	9.2	0.1	5.1	0.1	5.1	5.1	5.1
F.F	3.0	3.1	5.1	5.1	0	0	5.1	5.1	4.9	0	9.3	4.1	0	7.6	5.1	5.1	0	5.1	5.1	0
REW	3.0	3.1	5.1	5.1	0	0	5.1	5.1	4.9	0	9.3	4.1	0	7.6	5.1	5.1	5.1	5.1	5.1	0

REF. NO.	IC6002																			
MODE	41	42	43	44	45	46	47	48	49	50	51	52	53	54	55	56	57	58	59	60
STOP	0	5.0	3.7	3.7	3.7	3.7	5.2	3.7	1.0	0.5	5.0	5.0	5.1	1.9	2.3	5.1	0	5.0	5.1	5.0
PLAY	5.0	0	3.7	3.7	0.5	3.7	5.2	3.7	1.0	0.5	5.0	5.0	5.1	1.9	2.3	5.1	0	5.0	5.1	5.0
REC	0	0.1	3.7	3.7	0.5	3.7	0.2	0.5	0	0.5	5.0	5.0	5.1	1.9	2.3	5.1	0	4.6	4.5	5.0
F.F	0	5.0	3.7	0.5	3.7	3.7	5.2	3.7	1.0	0.5	5.0	5.0	5.1	1.9	2.3	5.1	0	5.0	5.1	5.0
REW	0	5.0	0.5	3.7	3.7	3.7	5.2	3.7	1.0	0.5	5.0	5.0	5.1	1.9	2.3	5.1	0	5.0	5.1	5.0

REF. NO.	IC6002																			
MODE	61	62	63	64																
STOP	5.1	5.1	5.1	5.0																
PLAY	5.1	5.1	5.1	5.0																
REC	4.7	4.3	4.5	4.7																
F.F	5.1	5.1	5.1	5.0																
REW	5.1	5.1	5.1	5.0																

REF. NO.	IC6003																			
MODE	1	2	3	4	5	6	7	8	9	10	11	12	13	14						
STOP	2.0	2.0	2.0	0.4	0.1	0.1	0	0.4	3.1	3.1	3.1	9.3	9.3	9.3						
PLAY	2.0	2.0	2.0	0.4	0.1	0.1	0	0.4	3.1	3.1	3.1	9.3	9.3	9.3						
REC	2.0	2.0	2.0	0.4	0.1	0.1	0	0.4	3.1	3.1	3.1	9.3	9.3	9.3						
F.F	2.0	2.0	2.0	0.4	0.1	0.1	0	0.4	3.1	3.1	3.1	9.3	9.3	9.3						
REW	2.0	2.0	2.0	0.4	0.1	0.1	0	0.4	3.1	3.1	3.1	9.3	9.3	9.3						

REF. NO.	IC6004																			
MODE	1	2	3	4	5	6	7	8	9											
STOP	6.4	13.9	0	4.4	0	4.4	0	13.9	6.4											
PLAY	6.9	13.9	0	4.4	0	4.4	0	13.9	6.9											
REC	6.9	13.9	0	4.4	0	4.4	0	13.9	6.9											
F.F	6.4	13.9	0	4.4	0	4.5	0	13.9	6.4											
REW	6.4	13.9	0	4.4	0	4.4	0	13.9	6.4											

REF. NO.	IC6005																			
MODE	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16				
STOP	5.1	0	4.8	5.2	4.8	5.2	4.8	0	4.8	5.2	4.7	0	4.7	0.7	5.1	5.2				
PLAY	5.1	5.2	4.8	0	4.8	0	4.8	0	4.8	5.2	4.7	0	4.7	0.7	5.1	5.2				
REC	4.4	5.2	4.8	0	4.1	0	4.0	0	4.8	5.2	4.4	0	4.3	0.7	4.7	5.2				
F.F	5.1	0	4.8	5.2	4.8	5.2	4.8	0	4.8	5.2	4.7	0	4.7	0.7	5.1	5.2				
REW	5.1	0	4.8	5.2	4.8	5.2	4.8	0	4.8	5.2	4.7	0	4.7	0.7	5.1	5.2				

REF. NO.	IC6006																			
MODE	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20
STOP	5.2	0	0	0	0	0	0	0	0.6	5.1	0	2.7	0	2.7	0	5.2	0	0	0	5.1
PLAY	5.2	0	0	0	0	0	0	0	0.4	0	0	5.2	0	5.2	0	0	0	0	0	5.1
REC	5.2	2.8	0	0	0	0	0	0	0.1	5.1	0	3.1	0	3.1	0	5.2	0	0	0	4.5
F.F	5.2	0	0	0	0	0	0	0	0.6	0	0	2.7	0	2.7	0	5.2	0	0	0	5.1
REW	5.2	0	0	0	0	0	0	0	0	0	0	2.7	0	2.7	0	5.2	0	0	0	5.1

REF. NO.	IC6006																			
MODE	21	22	23	24	25	26	27	28	29	30	31	32	33	34	35	36	37	38	39	40
STOP	0	5.1	5.1	0	0	0	0	0	5.1	0	0	0	0	0	0	5.2	0	0	0	0
PLAY	0	5.1	5.1	0	5.1	0	0	5.1	5.1	0	5.0	0	0	0	0	5.2	0	0	5.2	0
REC	0	4.5	4.7	0	4.7	0	0	4.4	4.5	0	2.7	0	0.4	2.7	0	5.2	0	0	5.2	0
F.F	0	5.1	5.1	0	5.1	0	0	5.1	5.1	0	0	0	0	0	0	5.2	0	0	5.2	0
REW	0	5.1	5.1	0	5.1	0	0	5.1	0	0	3.0	0	0	0	0	5.2	0	0	0	0

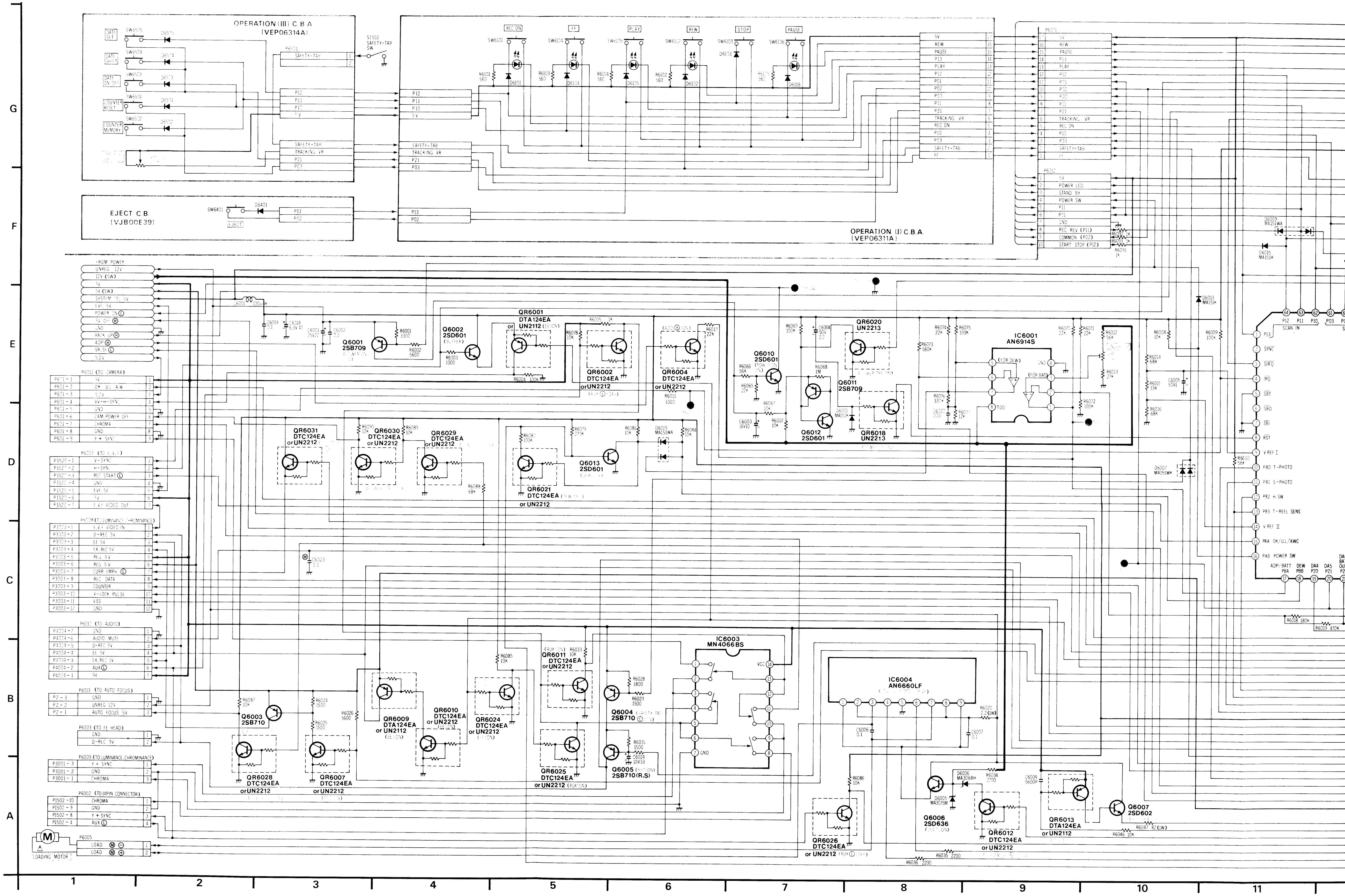
REF. NO.	IC6006																			
MODE	41	42																		
STOP	0	0																		
PLAY	0	0																		
REC	0	0																		
F.F	0	0																		
REW	0	0																		

SYSTEM CONTROL SCHEMATIC	
Transistor	
Q1501	E-21
Q1502	C-20
Q1510	C-20
Q6001	E-3
Q6002	E-4
Q6003	B-3
Q6004	B-6
Q6005	A-6
Q6006	A-8
Q6007	A-10
Q6008	G-15
Q6009	F-15
Q6010	E-7
Q6011	E-7
Q6012	D-7
Q6013	D-5
Transistor & Resistor	
QR6001	E-5
QR6002	E-5
QR6004	E-6
QR6007	A-3
QR6009	B-4
QR6010	B-4
QR6011	B-5
QR6012	A-9
QR6013	A-9
QR6014	D-18
QR6015	E-17
QR6016	E-18
QR6018	D-8
QR6020	E-8
QR6021	D-5
QR6022	D-16
QR6023	E-16
QR6024	B-5
QR6025	A-5
QR6026	A-7
QR6027	E-15
QR6028	A-3
QR6029	D-4
QR6030	D-4
QR6031	D-3
Integrated Circuit	
IC6001	E-9
IC6002	D-12
IC6003	B-7
IC6004	B-8
IC6005	C-16
IC6006	F-17
Test Point	
TP6001	C-10
TP6006	E-14
TP6009	D-10
TP6010	F-15
TP6011	F-15
TP6012	E-7
TP6014	D-6
TP GND3	F-8

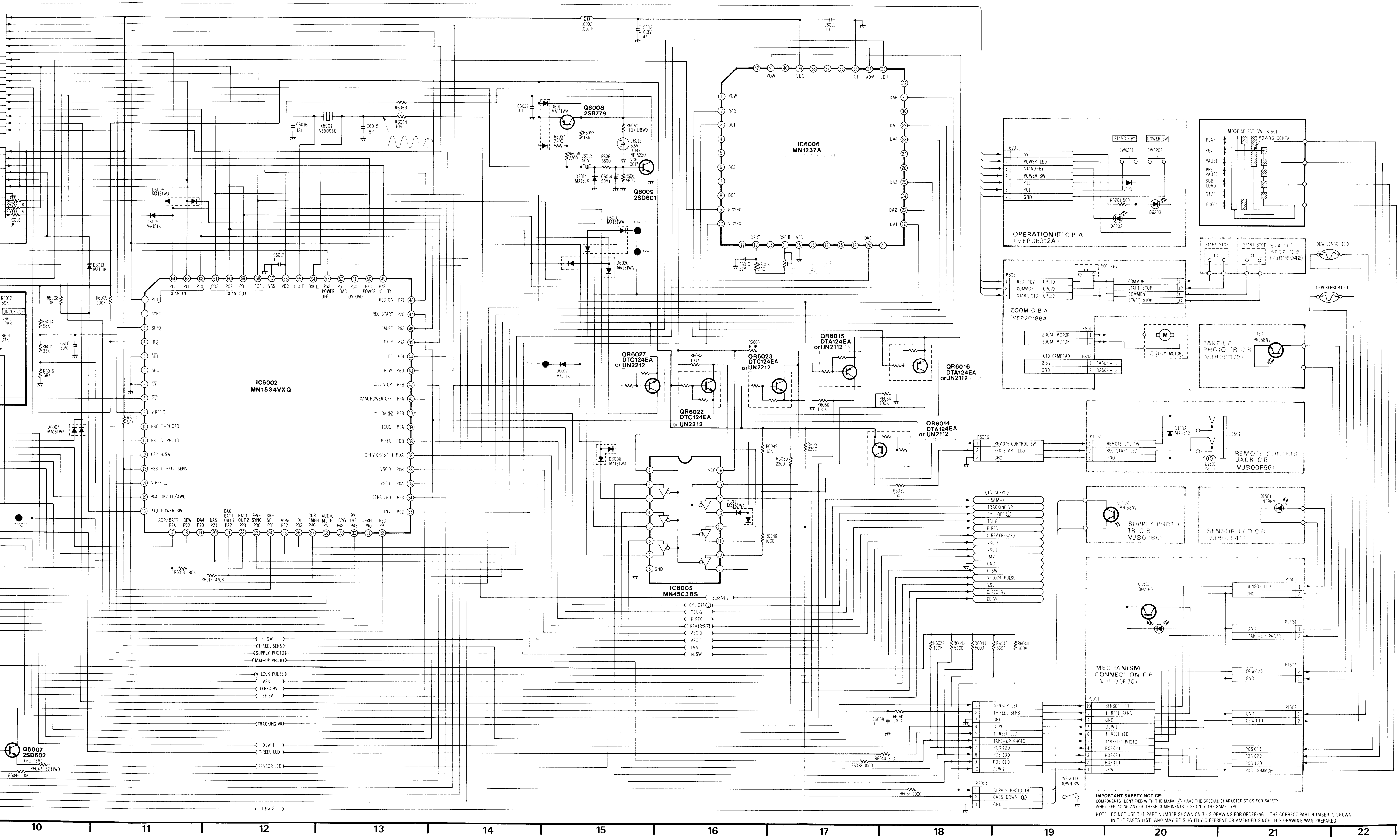
3-18. SYSTEM CONTROL SCHEMATIC DIAGRAM

Adjustment	
VR6001	E-10
VR6002	E-17
VR6501	G-2
Connector	
P801	E-19
P802	E-19
P803	E-19
P1501	B-19
P1502	B-21
P1504	B-21
P1505	C-21
P1506	B-21
P1507	D-19
P6001	G-9
P6002	A-1
P6003	B-1
P6004	A-18
P6005	A-1
P6006	D-18
P6007	D-1
P6008	C-1
P6009	A-1
P6010	C-1
P6011	E-1
P6012	F-9
P6013	B-1
P6201	F-19
P6501	G-3

ADDRESS INFORMATION



OPERATION (III) C.B.A (VEP06314A)
S1502 SAFETY-TAB SW
EJECT C.B (VJB00E39)
OPERATION (I) C.B.A. (VEP06311A)
REC ON
FF
PLAY
REW
STOP
PAUSE
EJECT
QR6001 DTA124EA or UN2112
Q6001 2SB709
Q6002 2SD601
QR6002 DTC124EA or UN2212
QR6004 DTC124EA or UN2212
Q6010 2SD601
QR6020 UN2213
Q6011 2SB709
Q6012 2SD601
QR6018 UN2213
IC6001 AN6914S
QR6031 DTC124EA or UN2212
QR6030 DTC124EA or UN2212
QR6029 DTC124EA or UN2212
QR6021 DTC124EA or UN2212
Q6013 2SD601
IC6003 MN4066BS
IC6004 AN6660LF
Q6003 2SB710
QR6009 DTA124EA or UN2112
QR6010 DTC124EA or UN2212
QR6024 DTC124EA or UN2212
QR6011 DTC124EA or UN2212
QR6025 DTC124EA or UN2212
Q6004 2SB710
Q6005 2SB710(R.S)
QR6028 DTC124EA or UN2212
QR6007 DTC124EA or UN2212
QR6026 DTC124EA or UN2212
Q6006 2SD636
QR6012 DTC124EA or UN2212
QR6013 DTA124EA or UN2112
Q6007 2SD602
P6011 (TO CAMERA)
P6007 (TO E.V.F)
P6008 (TO LUMINANCE/CHROMINANCE)
P6010 (TO AUDIO)
P6013 (TO AUTO FOCUS)
P6003 (TO FE HEAD)
P6009 (TO LUMINANCE/CHROMINANCE)
P6002 (TO 14PIN CONNECTOR)
P6005
LOADING MOTOR
G
F
E
D
C
B
A
1
2
3
4
5
6
7
8
9
10
11

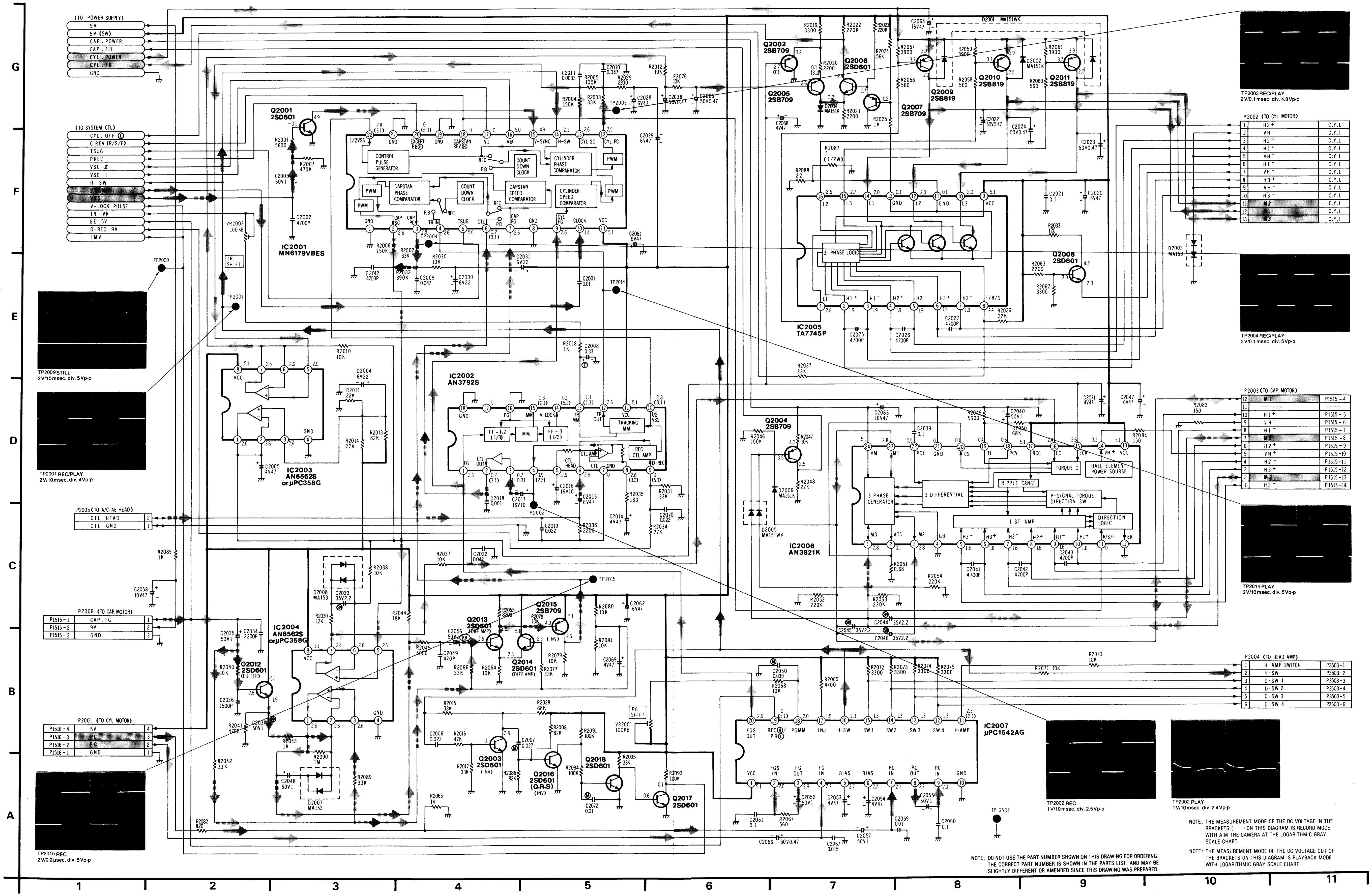

IC6002
MN1534VXQ
IC6006
MN1237A
IC6005
MN4503BS
Q6008
2SB779
Q6009
2SD601
Q6007
2SD602
QR6027
DTC124EA
or UN2212
QR6022
DTC124EA
or UN2212
QR6023
DTC124EA
or UN2212
QR6015
DTA124EA
or UN2112
QR6016
DTA124EA
or UN2112
QR6014
DTA124EA
or UN2112
X6001
VSX0086
L6002
100μH
OPERATION(Ⅱ)C.B.A
(VEP06312A)
STAND-BY
POWER SW
SW6201
SW6202
5V
POWER LED
STAND-BY
POWER SW
P11
P01
GND
MODE SELECT SW S1501
MOVING CONTACT
PLAY
REV
PAUSE
PRE PAUSE
SUB LOAD
STOP
EJECT
START STOP
START STOP C.B
(VJB26042)
DEW SENSOR(1)
DEW SENSOR(2)
REC REV
COMMON
START STOP
ZOOM C.B.A
(VEP201B8A)
ZOOM MOTOR
(TO CAMERA)
8.6V
GND
TAKE-UP PHOTO TR C.B
(VJB00F70)
PN158NV
REMOTE CONTROL SW
REC START LED
REMOTE CONTROL JACK C.B
(VJB00F66)
D1502
MA4100
SUPPLY PHOTO TR. C.B
(VJB00F69)
Q1502
PN158NV
SENSOR LED C.B
(VJB00E41)
D1501
LN59NV
MECHANISM CONNECTION C.B
(VJB00F70)
Q1501
ON2160
SENSOR LED
T-REEL SENS
GND
DEW 1
T-REEL LED
TAKE-UP PHOTO
POS(2)
POS(3)
POS(1)
DEW 2
POS COMMON
SUPPLY PHOTO TR.
CASS. DOWN
CASSETTE DOWN SW
(TO SERVO)
3.58MHz
TRACKING VR
CYL OFF
TSUG
P.REC
C.REV(R/S/F)
VSC 0
VSC 1
IMV
H.SW
V-LOCK PULSE
VSS
D.REC 9V
EE 5V
T-REEL SENS
SUPPLY PHOTO
TAKE-UP PHOTO
SCAN IN
SCAN OUT
REC ON
REC START
PAUSE
PLAY
FF
REW
LOAD V.UP
CAM.POWER OFF
CYL ON
SENS LED
INV
V.REF Ⅰ
T-PHOTO
S-PHOTO
H.SW
T-REEL SENS
V.REF Ⅱ
OK/U.L/AWC
POWER SW
10
11
12
13
14
15
16
17
18
19
20
21
22

IMPORTANT SAFETY NOTICE:
COMPONENTS IDENTIFIED WITH THE MARK ⚠ HAVE THE SPECIAL CHARACTERISTICS FOR SAFETY
WHEN REPLACING ANY OF THESE COMPONENTS, USE ONLY THE SAME TYPE

NOTE: DO NOT USE THE PART NUMBER SHOWN ON THIS DRAWING FOR ORDERING. THE CORRECT PART NUMBER IS SHOWN IN THE PARTS LIST, AND MAY BE SLIGHTLY DIFFERENT OR AMENDED SINCE THIS DRAWING WAS PREPARED.

3-19. SERVO SCHEMATIC DIAGRAM

CYLINDER SERVO SPEED LOOP CYLINDER SERVO PHASE LOOP CAPSTAN SERVO SPEED LOOP CAPSTAN SERVO PHASE LOOP


(TO POWER SUPPLY)
9V
5V (SW)
CAP. POWER
CAP. FG
CYL. POWER
CYL. FG
GND
(TO SYSTEM CTL)
CYL. OFF
C REV (R/S/F)
TSUG
PREC
VSC Ø
VSC 1
H-SW
3.58MHz
VSS
V-LOCK PULSE
TR-VR
EE 5V
D-REC 9V
IMV
IC2001
MN6179VBES
IC2002
AN3792S
IC2003
AN6562S
or μPC358G
IC2004
AN6562S
or μPC358G
IC2005
TA7745P
IC2006
AN3821K
IC2007
μPC1542AG
CONTROL PULSE GENERATOR
CAPSTAN PHASE COMPARATOR
COUNT DOWN CLOCK
CAPSTAN SPEED COMPARATOR
CYLINDER PHASE COMPARATOR
CYLINDER SPEED COMPARATOR
3-PHASE LOGIC
3 PHASE GENERATOR
3 DIFFERENTIAL
RIPPLE CANCEL
P-SIGNAL TORQUE DIRECTION SW
DIRECTION LOGIC
1 ST AMP
TORQUE C
HALL ELEMENT POWER SOURSE
TRACKING MM
CTL HEAD
CTL AMP
REC CTL AMP
P2001 (TO CYL MOTOR)
P2002 (TO CYL MOTOR)
P2003 (TO CAP. MOTOR)
P2004 (TO HEAD AMP)
P2005 (TO A/C-AE HEAD)
P2006 (TO CAP. MOTOR)
TP2009 STILL
2V/10msec. div. 5Vp-p
TP2001 REC/PLAY
2V/10msec. div. 4Vp-p
TP2015 REC
2V/0.2μsec. div. 5Vp-p
TP2003 REC/PLAY
2V/0.1msec. div. 4.8Vp-p
TP2004 REC/PLAY
2V/0.1msec. div. 5Vp-p
TP2014 PLAY
2V/10msec. div. 5Vp-p
TP2002 REC
1V/10msec. div. 2.5Vp-p
TP2002 PLAY
1V/10msec. div. 2.4Vp-p
TP GND2
G
F
E
D
C
B
A
1
2
3
4
5
6
7
8
9
10
11

NOTE: DO NOT USE THE PART NUMBER SHOWN ON THIS DRAWING FOR ORDERING. THE CORRECT PART NUMBER IS SHOWN IN THE PARTS LIST, AND MAY BE SLIGHTLY DIFFERENT OR AMENDED SINCE THIS DRAWING WAS PREPARED.

NOTE: THE MEASUREMENT MODE OF THE DC VOLTAGE IN THE BRACKETS (　) ON THIS DIAGRAM IS RECORD MODE WITH AIM THE CAMERA AT THE LOGARITHMIC GRAY SCALE CHART.

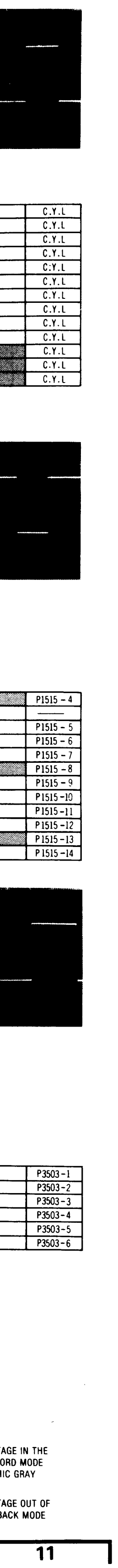
NOTE: THE MEASUREMENT MODE OF THE DC VOLTAGE OUT OF THE BRACKETS ON THIS DIAGRAM IS PLAYBACK MODE WITH LOGARITHMIC GRAY SCALE CHART.

SERVO SCHEMATIC	
Transistor	
Q2001	F-3
Q2002	G-7
Q2003	A-4
Q2004	D-7
Q2005	G-7
Q2006	G-7
Q2007	G-8
Q2008	E-9
Q2009	G-8
Q2010	G-8
Q2011	G-9
Q2012	B-2
Q2013	C-4
Q2014	B-5
Q2015	C-5
Q2016	A-5
Integrated Circuit	
IC2001	E-3
IC2002	D-4
IC2003	D-3
IC2004	B-3
IC2005	E-7
IC2006	C-7
IC2007	B-8
Test Point	
TP2001	E-2
TP2002	C-5
TP2003	G-5
TP2004	F-4
TP2009	E-2
TP2014	E-5
TP2015	C-5
TP GND2	A-8
Adjustment	
VR2001	B-5
VR2002	F-2
Connector	
P2001	B-1
P2002	F-10
P2003	D-10
P2004	B-10
P2005	C-1
P2006	C-1

ADDRESS INFORMATION

Back Page:
SYSTEM CONTROL Section

SERVO PHASE LOOP

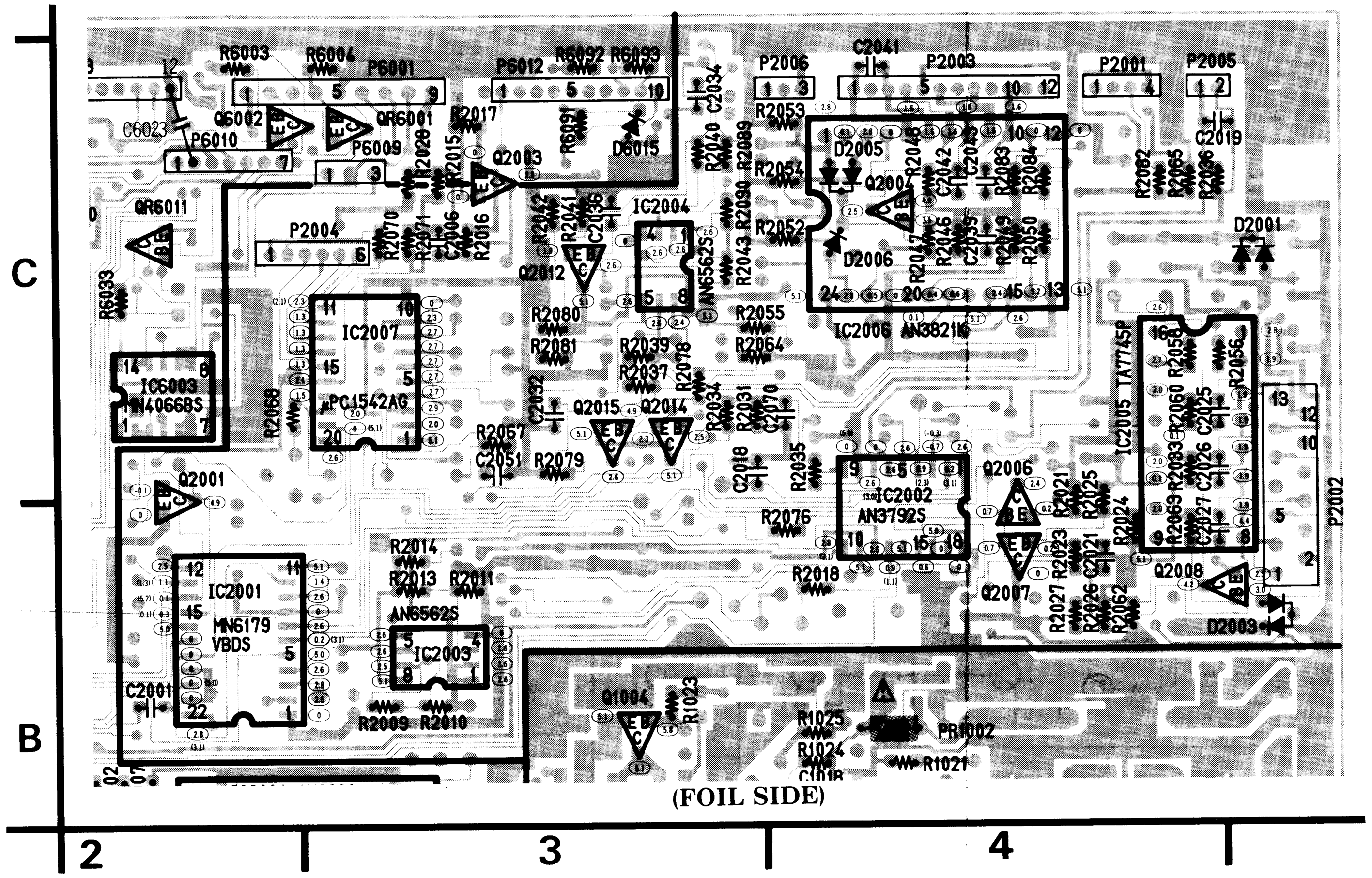


C.Y.L
C.Y.L
C.Y.L
C.Y.L
C:Y.L
C.Y.L
C.Y.L
C.Y.L
C.Y.L
C.Y.L
C.Y.L
C.Y.L
C.Y.L
P1515 - 4
P1515 - 5
P1515 - 6
P1515 - 7
P1515 - 8
P1515 - 9
P1515 -10
P1515 -11
P1515 -12
P1515 -13
P1515 -14
P3503 - 1
P3503 - 2
P3503 - 3
P3503 - 4
P3503 - 5
P3503 - 6
AGE IN THE
ORD MODE
IC GRAY
AGE OUT OF
BACK MODE
11

3-20. SERVO in Main Circuit Board (VEP06336A)

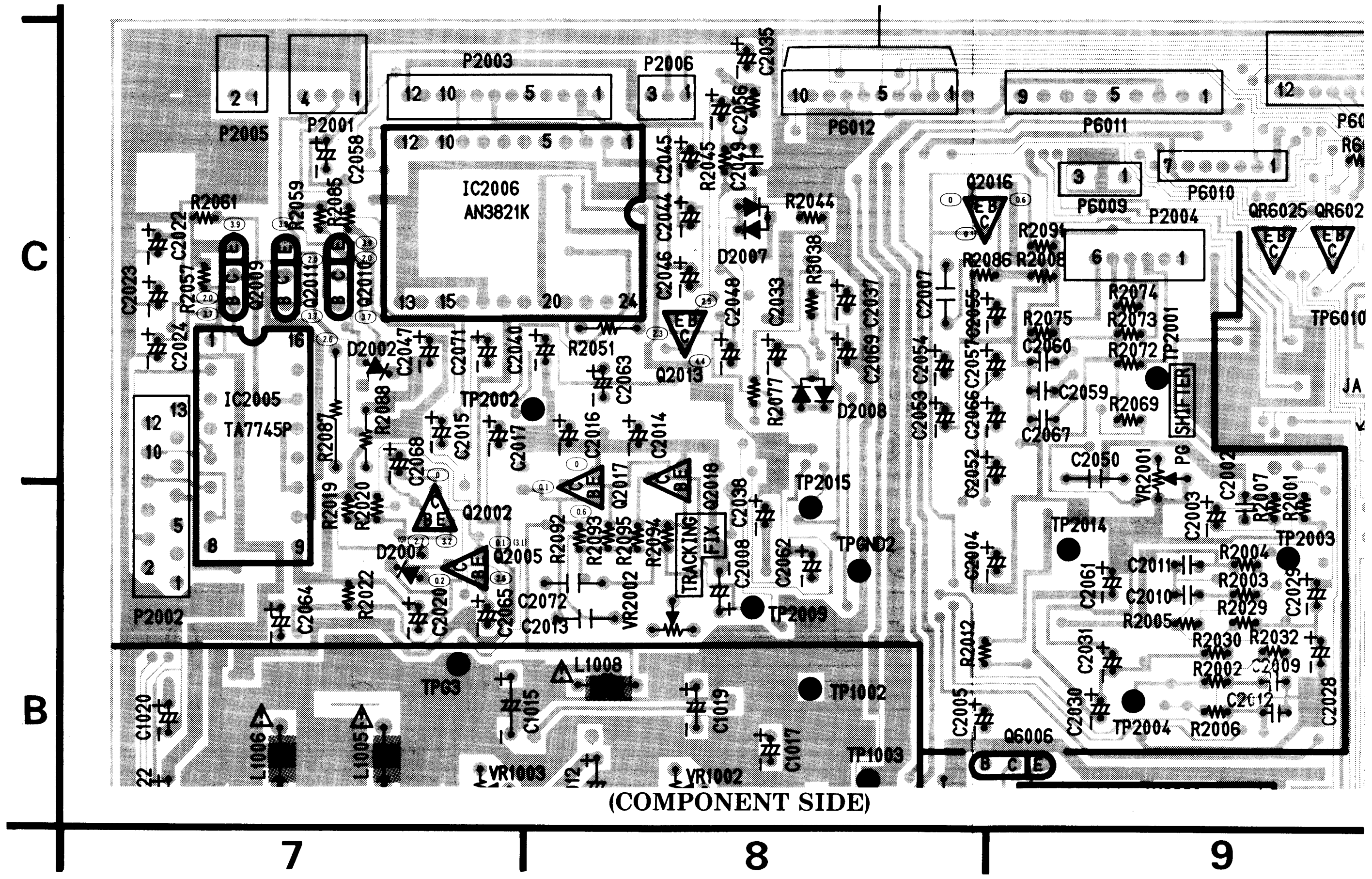
SERVO SCHEMATIC	
Transistor	
Q2001	F-3
Q2002	G-7
Q2003	A-4
Q2004	D-7
Q2005	G-7
Q2006	G-7
Q2007	G-8
Q2008	E-9
Q2009	G-8
Q2010	G-8
Q2011	G-9
Q2012	B-2
Q2013	C-4
Q2014	B-5
Q2015	C-5
Q2016	A-5
Integrated Circuit	
IC2001	E-3
IC2002	D-4
IC2003	D-3
IC2004	B-3
IC2005	E-7
IC2006	C-7
IC2007	B-8
Test Point	
TP2001	E-2
TP2002	C-5
TP2003	G-5
TP2004	F-4
TP2009	E-2
TP2014	E-5
TP2015	C-5
TP GND2	A-8
Adjustment	
VR2001	B-5
VR2002	F-2
Connector	
P2001	B-1
P2002	F-10
P2003	D-10
P2004	B-10
P2005	C-1
P2006	C-1

ADDRESS INFORMATION



C
B
2
3
4
IC2001
MN6179
VBDS
IC2002
AN3792S
IC2003
AN6562S
IC2004
AN6562S
IC2005
TA7745P
IC2006
AN3821K
IC2007
μPC1542AG
IC6003
MN4066BS
Q2001
Q2003
Q2006
Q2007
Q2008
Q2012
Q2014
Q2015
Q1004
Q6001
Q6002
QR6011
D2001
D2003
D2005
D2006
D6015
P2001
P2002
P2003
P2004
P2005
P2006
P6001
P6009
P6010
P6012
PR1002
R1021
R1023
R1024
R1025
C2001
C2019
C2041
C2051

(FOIL SIDE)



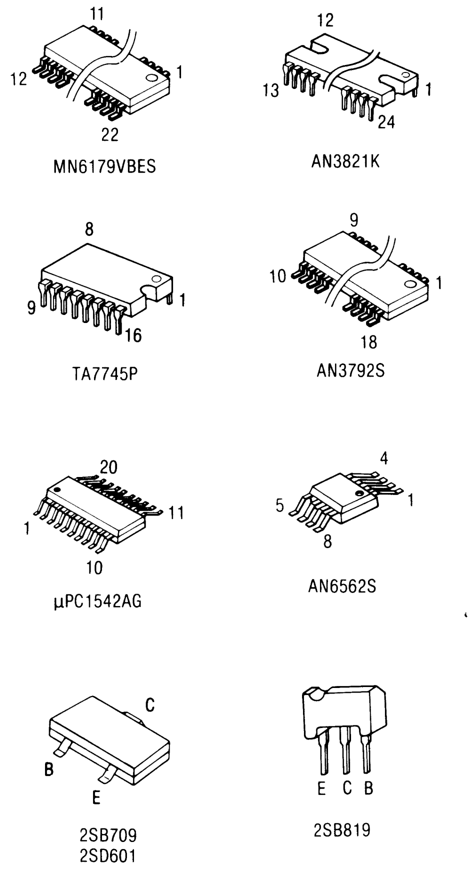
C
B
7
8
9
IC2005
TA7745P
IC2006
AN3821K
Q2002
Q2005
Q2013
Q2016
Q2017
Q2018
Q6006
QR6025
D2002
D2004
D2007
D2008
P2001
P2002
P2003
P2004
P2005
P2006
P6009
P6010
P6011
P6012
TP2001
TP2002
TP2003
TP2004
TP2009
TP2014
TP2015
TPGND2
TP63
TP1002
TP1003
TP6010
VR2001
VR2002
VR1002
VR1003
TRACKING FIX
SHIFTER
PG
L1005
L1006
L1008
C1015
C1017
C1019
C1020

(COMPONENT SIDE)

SERVO CIRCUIT BOARD		
Transistor		
Q2001	C-2	Ⓕ
Q2002	B-7	Ⓒ
Q2003	C-3	Ⓕ
Q2004	C-4	Ⓕ
Q2005	B-7	Ⓒ
Q2006	C-4	Ⓕ
Q2007	B-4	Ⓕ
Q2008	B-4	Ⓕ
Q2009	C-7	Ⓒ
Q2010	C-7	Ⓒ
Q2011	C-7	Ⓒ
Q2012	C-3	Ⓕ
Q2013	C-8	Ⓒ
Q2014	C-3	Ⓕ
Q2015	C-3	Ⓕ
Q2016	C-8	Ⓒ
Q2017	B-8	Ⓒ
Q2018	B-8	Ⓒ
Integrated Circuit		
IC2001	B-2	Ⓕ
IC2002	C-4	Ⓕ
IC2003	B-3	Ⓕ
IC2004	C-3	Ⓕ
IC2005	C-7	Ⓒ
IC2005	C-4	Ⓕ
IC2006	C-7	Ⓒ
IC2006	C-4	Ⓒ
IC2007	C-3	Ⓕ
Test Point		
TP2001	C-9	Ⓒ
TP2002	C-8	Ⓒ
TP2003	B-9	Ⓒ
TP2004	B-9	Ⓒ
TP2009	B-8	Ⓒ
TP2014	B-9	Ⓒ
TP2015	B-8	Ⓒ
TP GND2	B-8	Ⓒ
Adjustment		
VR2001	B-9	Ⓒ
VR2002	B-8	Ⓒ

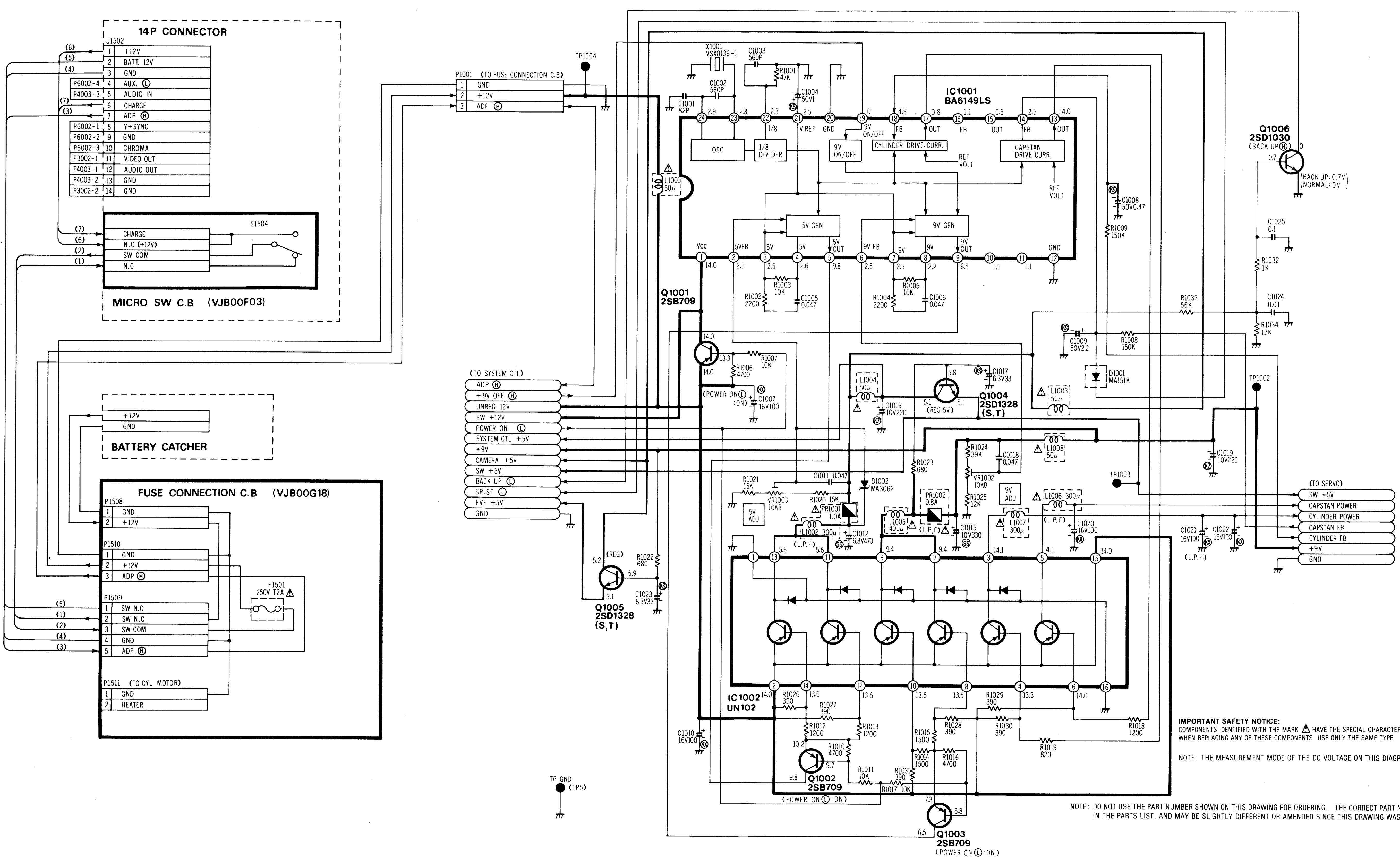
ADDRESS INFORMATION
Ⓒ ··· COMPONENT SIDE
Ⓕ ··· FOIL SIDE

ICs & TRANSISTORs INFORMATION



11
12
1
22
MN6179VBES
12
13
1
24
AN3821K
8
9
1
16
TA7745P
9
10
1
18
AN3792S
20
1
11
10
μPC1542AG
4
5
1
8
AN6562S
C
B
E
2SB709
2SD601
E C B
2SB819

3-21. POWER SUPPLY SCHEMATIC DIAGRAM

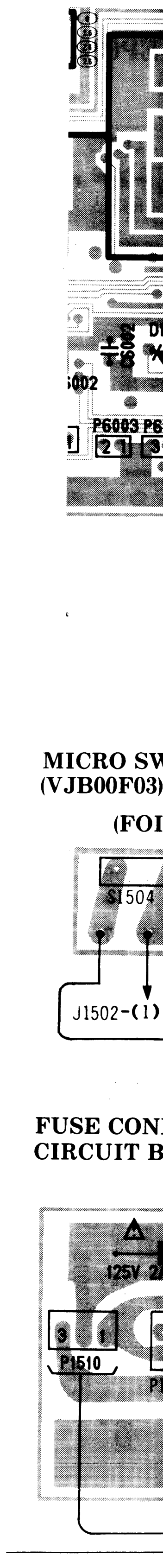

14P CONNECTOR
J1502
+12V
BATT. 12V
GND
AUX. Ⓛ
AUDIO IN
CHARGE
ADP Ⓗ
Y+SYNC
GND
CHROMA
VIDEO OUT
AUDIO OUT
GND
GND
P6002-4
P4003-3
P6002-1
P6002-2
P6002-3
P3002-1
P4003-1
P4003-2
P3002-2
S1504
CHARGE
N.O (+12V)
SW COM
N.C
MICRO SW C.B (VJB00F03)
BATTERY CATCHER
FUSE CONNECTION C.B (VJB00G18)
P1508
P1510
P1509
SW N.C
SW COM
P1511 (TO CYL MOTOR)
HEATER
F1501
250V T2A
P1001 (TO FUSE CONNECTION C.B)
TP1004
L1001 50μ
X1001 VSX0136-1
C1003 560P
C1002 560P
C1001 82P
R1001 47K
C1004 50V1
IC1001
BA6149LS
OSC
1/8 DIVIDER
V REF
9V ON/OFF
CYLINDER DRIVE CURR.
CAPSTAN DRIVE CURR.
REF VOLT
5V GEN
9V GEN
VCC
5VFB
5V OUT
9V FB
9V OUT
R1002 2200
R1003 10K
C1005 0.047
R1004 2200
R1005 10K
C1006 0.047
Q1001
2SB709
R1006 4700
R1007 10K
C1007 16V100
(POWER ON Ⓛ : ON)
Q1006
2SD1030
(BACK UP Ⓗ)
BACK UP: 0.7V
NORMAL: 0V
C1008 50V0.47
R1009 150K
C1025 0.1
R1032 1K
R1033 56K
C1024 0.01
R1034 12K
C1009 50V22
R1008 150K
D1001 MA151K
L1003 50μ
TP1002
(TO SYSTEM CTL)
ADP Ⓗ
+9V OFF Ⓗ
UNREG 12V
SW +12V
POWER ON Ⓛ
SYSTEM CTL +5V
+9V
CAMERA +5V
SW +5V
BACK UP Ⓛ
SR.SF Ⓛ
EVF +5V
GND
L1004 50μ
C1016 10V220
Q1004
2SD1328
(S,T)
(REG 5V)
C1017 6.3V33
C1019 10V220
L1008 50μ
R1023 680
R1024 39K
C1018 0.047
VR1002 10KB
R1025 12K
9V ADJ
PR1002 0.8A
L1005 400μ
C1015 10V330
L1007 300μ
L1006 300μ
C1020 16V100
(L.P.F)
TP1003
C1021 16V100
C1022 16V100
(TO SERVO)
SW +5V
CAPSTAN POWER
CYLINDER POWER
CAPSTAN FB
CYLINDER FB
+9V
GND
R1021 15K
VR1003 10KB
5V ADJ
C1011 0.047
R1020 15K
PR1001 1.0A
D1002 MA3062
L1002 300μ
C1012 6.3V470
Q1005
2SD1328
(S,T)
(REG)
R1022 680
C1023 6.3V33
IC1002
UN102
R1026 390
R1027 390
R1012 1200
R1013 1200
R1010 4700
Q1002
2SB709
R1011 10K
R1031 390
R1017 10K
(POWER ON Ⓛ : ON)
R1015 1500
R1028 390
R1014 1500
R1016 4700
R1029 390
R1030 390
R1019 820
R1018 1200
Q1003
2SB709
(POWER ON Ⓛ : ON)
C1010 16V100
TP GND
(TP5)

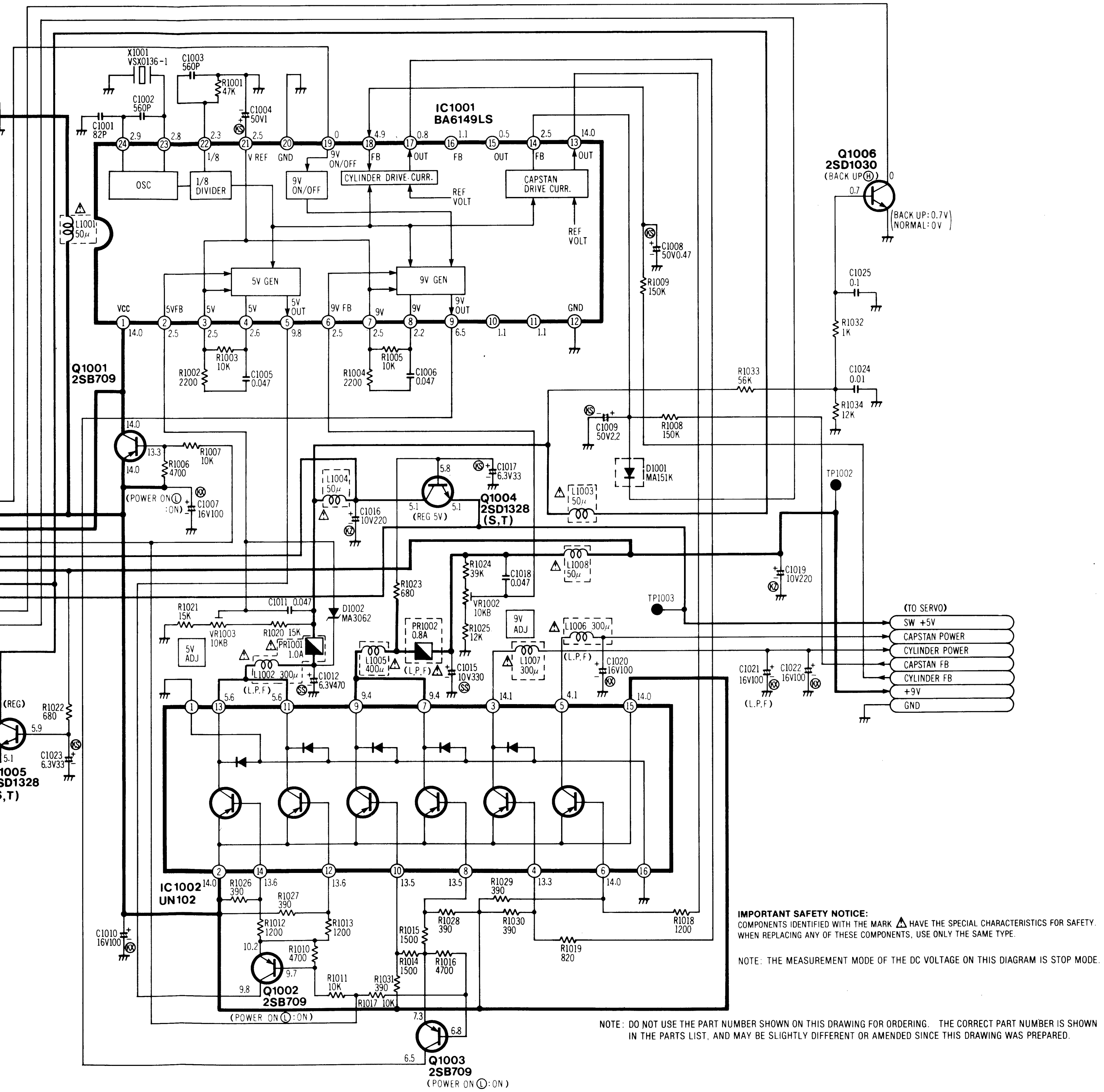
IMPORTANT SAFETY NOTICE:
COMPONENTS IDENTIFIED WITH THE MARK ⚠ HAVE THE SPECIAL CHARACTERISTICS FOR SAFETY.
WHEN REPLACING ANY OF THESE COMPONENTS, USE ONLY THE SAME TYPE.

NOTE: THE MEASUREMENT MODE OF THE DC VOLTAGE ON THIS DIAGRAM IS STOP MODE.

NOTE: DO NOT USE THE PART NUMBER SHOWN ON THIS DRAWING FOR ORDERING. THE CORRECT PART NUMBER IS SHOWN IN THE PARTS LIST, AND MAY BE SLIGHTLY DIFFERENT OR AMENDED SINCE THIS DRAWING WAS PREPARED.

3-22. P


MICRO SW
(VJB00F03)
(FOI
S1504
J1502-(1)
FUSE CON
CIRCUIT B
125V
P1510

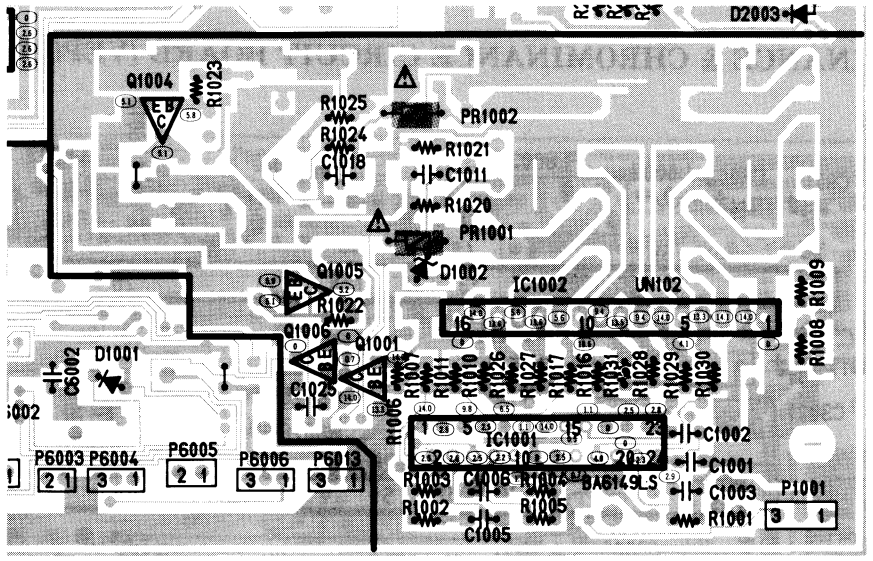

X1001 VSX0136-1
C1003 560P
R1001 47K
C1004 50V1
C1002 560P
C1001 82P
IC1001 BA6149LS
OSC
1/8 DIVIDER
V REF
GND
9V ON/OFF
CYLINDER DRIVE CURR.
REF VOLT
CAPSTAN DRIVE CURR.
FB
OUT
Q1006 2SD1030 (BACK UP H)
BACK UP: 0.7V NORMAL: 0V
L1001 50μ
5V GEN
9V GEN
VCC
5VFB
5V OUT
9V FB
9V OUT
C1008 50V0.47
R1009 150K
C1025 0.1
R1032 1K
Q1001 2SB709
R1003 10K
R1002 2200
C1005 0.047
R1005 10K
R1004 2200
C1006 0.047
R1033 56K
C1024 0.01
R1034 12K
C1009 50V2.2
R1008 150K
D1001 MA151K
R1007 10K
R1006 4700
C1007 16V100
(POWER ON L :ON)
L1004 50μ
C1016 10V220
Q1004 2SD1328 (S,T)
(REG 5V)
C1017 6.3V33
L1003 50μ
TP1002
R1024 39K
C1018 0.047
VR1002 10KB
R1025 12K
9V ADJ
L1008 50μ
R1023 680
C1019 10V220
TP1003
R1021 15K
VR1003 10KB
5V ADJ
C1011 0.047
R1020 15K
PR1001 1.0A
D1002 MA3062
PR1002 0.8A
L1002 300μ
C1012 6.3V470
L1005 400μ
(L.P.F)
C1015 10V330
L1007 300μ
L1006 300μ
C1020 16V100
C1021 16V100
C1022 16V100
(TO SERVO)
SW +5V
CAPSTAN POWER
CYLINDER POWER
CAPSTAN FB
CYLINDER FB
+9V
GND
(REG)
R1022 680
C1023 6.3V33
Q1005 2SD1328 (S,T)
IC1002 UN102
R1026 390
R1027 390
R1012 1200
R1013 1200
R1010 4700
R1011 10K
R1017 10K
R1031 390
R1015 1500
R1014 1500
R1028 390
R1016 4700
R1029 390
R1030 390
R1019 820
R1018 1200
C1010 16V100
Q1002 2SB709
(POWER ON L :ON)
Q1003 2SB709
(POWER ON L :ON)

IMPORTANT SAFETY NOTICE:
COMPONENTS IDENTIFIED WITH THE MARK ⚠ HAVE THE SPECIAL CHARACTERISTICS FOR SAFETY. WHEN REPLACING ANY OF THESE COMPONENTS, USE ONLY THE SAME TYPE.

NOTE: THE MEASUREMENT MODE OF THE DC VOLTAGE ON THIS DIAGRAM IS STOP MODE.

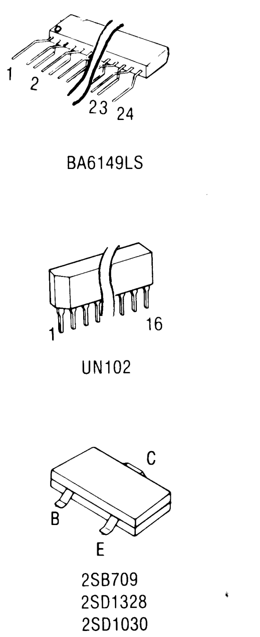
NOTE: DO NOT USE THE PART NUMBER SHOWN ON THIS DRAWING FOR ORDERING. THE CORRECT PART NUMBER IS SHOWN IN THE PARTS LIST, AND MAY BE SLIGHTLY DIFFERENT OR AMENDED SINCE THIS DRAWING WAS PREPARED.

3-22. POWER SUPPLY in Main Circuit Board (VEP06336A)


Q1004
R1023
R1025
R1024
C1018
PR1002
R1021
C1011
R1020
PR1001
D1002
Q1005
R1022
Q1006
Q1001
IC1002
UN102
D1001
C1025
IC1001
BA6149LS
C1002
C1001
C1003
R1001
R1009
R1008
P6003 P6004
P6005
P6006
P6013
P1001
R1002
R1005
C1005

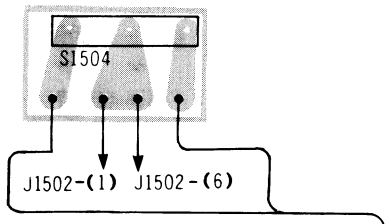
(FOIL SIDE)

ICs & TRANSISTORs INFORMATION


1 2 23 24
BA6149LS
1 16
UN102
C
B
E
2SB709
2SD1328
2SD1030

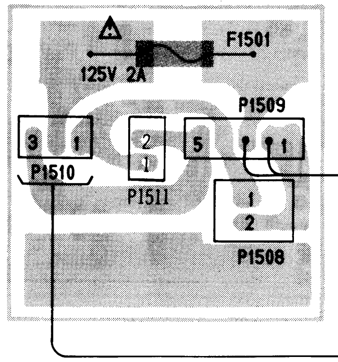
MICRO SW CIRCUIT BOARD (VJB00F03)

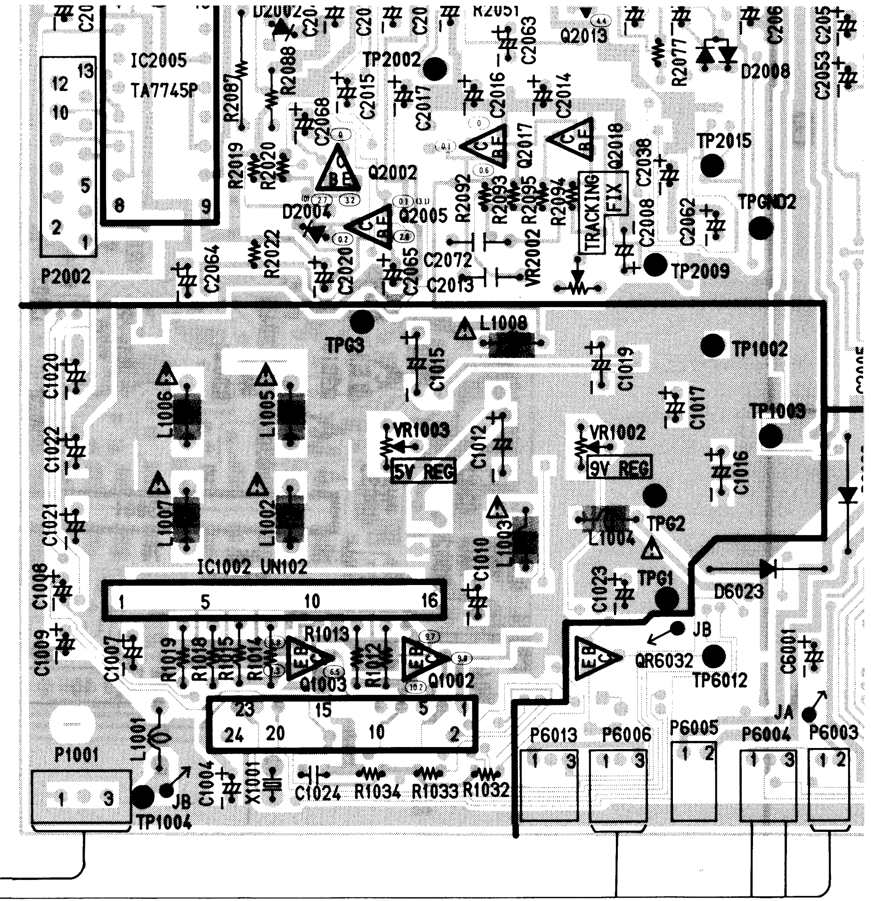
(FOIL SIDE)


S1504
J1502-(1)
J1502-(6)

FUSE CONNECTION CIRCUIT BOARD (VJB00G18)

(FOIL SIDE)

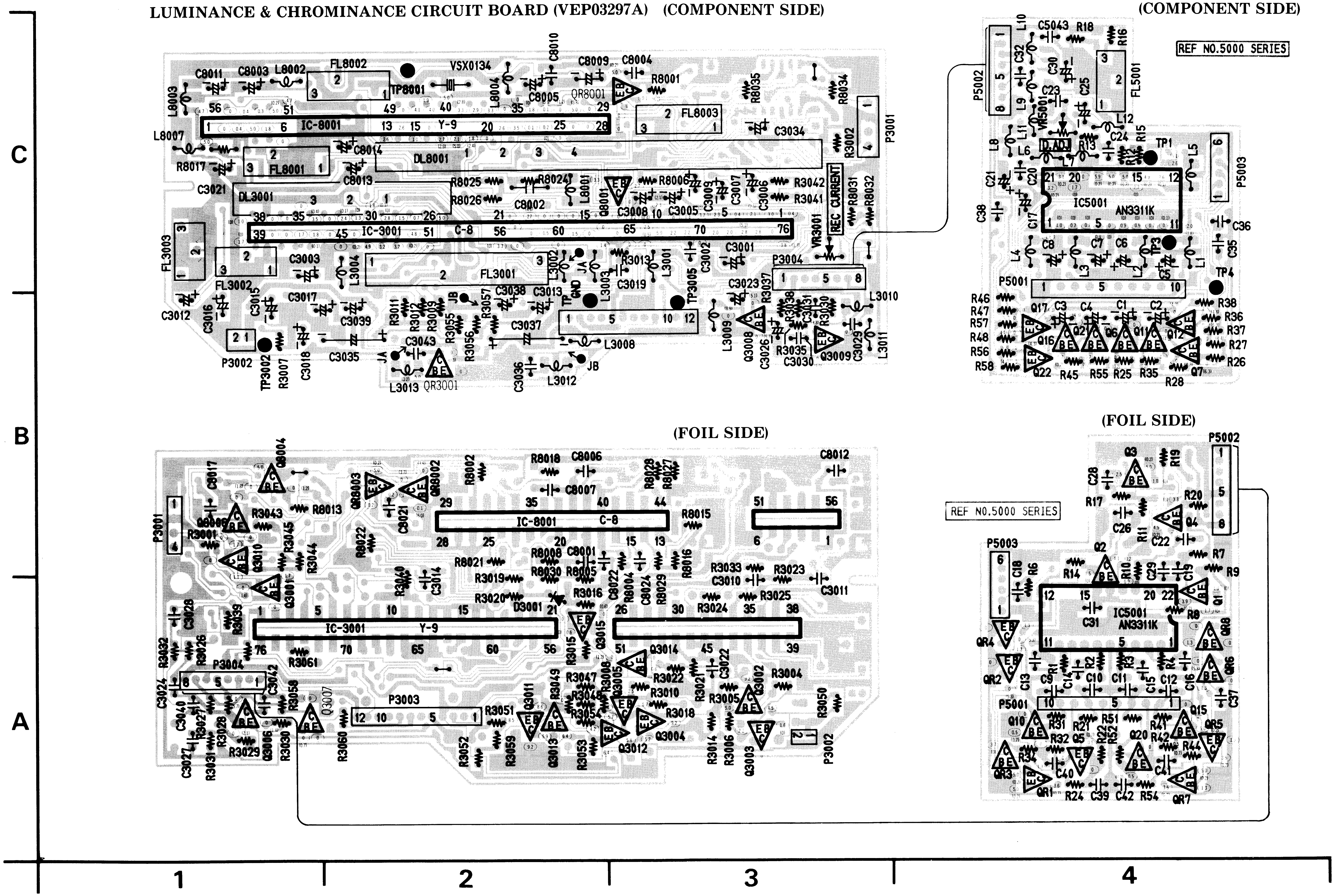

F1501
125V 2A
P1509
P1510
P1511
P1508


IC2005
TA7745P
TP2002
Q2013
D2008
TP2015
Q2002
TPGND2
D2004
Q2005
TRACKING FIX
TP2009
P2002
L1008
TPG3
TP1002
TP1003
VR1003
5V REG
VR1002
9V REG
L1006
L1005
L1007
L1002
L1003
TPG2
L1004
TPG1
D6023
IC1002 UN102
R1013
Q1003
Q1002
JB
QR6032
TP6012
JA
P1001
L1001
X1001
C1024 R1034 R1033 R1032
TP1004
P6013 P6006 P6005 P6004 P6003

(COMPONENT SIDE)

Next Page:
LUMINANCE, CHROMINANCE &
HEAD AMP Section

3-23. LUMINANCE, CHROMINANCE & HEAD AMP CIRCUIT BOARD (VEP03297A, VEP05073B)



LUMINANCE & CHROMINANCE CIRCUIT BOARD (VEP03297A) (COMPONENT SIDE)

HEAD AMP CIRCUIT BOARD (VEP05073B) (COMPONENT SIDE)

(FOIL SIDE)

(FOIL SIDE)

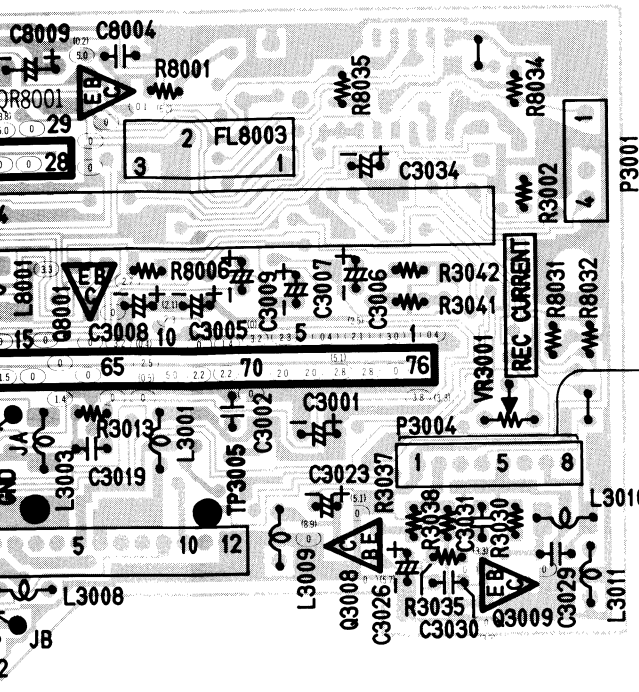
C
B
A
1
2
3
4
REF NO.5000 SERIES
IC-8001
IC-3001
DL8001
DL3001
FL8001
FL8002
FL8003
FL3001
FL3002
FL3003
FL5001
VSX0134
IC5001
AN3311K
Y-9
C-8
REC CURRENT
VR3001
VR5001
TP8001
TP3001
TP3002
TP3005
TP GND
TP1
TP3
TP4
P3001
P3002
P3003
P3004
P5001
P5002
P5003
QR8001
QR3001
Q3008
Q3009
L3008
L3010
L3011
L3012
L3013
JA
JB

LUMINANCE, CHROMINANCE & HEAD AMP CIRCUIT BOARD	
Transistor	
Q3001	A-1 Ⓕ
Q3002	A-3 Ⓕ
Q3003	A-3 Ⓕ
Q3004	A-3 Ⓕ
Q3005	A-3 Ⓕ
Q3006	A-1 Ⓕ
Q3007	A-1 Ⓕ
Q3008	B-3 Ⓒ
Q3009	B-3 Ⓒ
Q3010	B-1 Ⓕ
Q3011	A-2 Ⓕ
Q3012	A-3 Ⓕ
Q3013	A-2 Ⓕ
Q3014	A-3 Ⓕ
Q3015	A-2 Ⓕ
Q5001	A-4 Ⓕ
Q5002	B-4 Ⓕ
Q5003	B-4 Ⓕ
Q5004	B-4 Ⓕ
Q5005	A-4 Ⓕ
Q5006	B-4 Ⓒ
Q5007	B-4 Ⓒ
Q5010	A-4 Ⓕ
Q5011	B-4 Ⓒ
Q5012	B-4 Ⓒ
Q5015	A-4 Ⓕ
Q5016	B-4 Ⓒ
Q5017	B-4 Ⓒ
Q5020	A-4 Ⓕ
Q5021	B-4 Ⓒ
Q5022	B-4 Ⓒ
Q8001	C-2 Ⓒ
Q8004	B-1 Ⓕ
Q8005	C-3 Ⓒ
Q8006	B-1 Ⓕ
Transistor & Resistor	
QR3001	B-2 Ⓒ
QR5001	A-4 Ⓕ
QR5002	A-4 Ⓕ
QR5003	A-4 Ⓕ
QR5004	A-4 Ⓕ
QR5005	A-4 Ⓕ
QR5006	A-4 Ⓕ
QR5007	A-4 Ⓕ
QR5008	A-4 Ⓕ
QR8001	C-2 Ⓒ
QR8002	B-2 Ⓕ
QR8003	B-2 Ⓕ
Integrated Circuit	
IC3001	C-2 Ⓒ
IC3001	A-2 Ⓕ
IC5001	C-4 Ⓒ
IC5001	A-4 Ⓕ
IC8001	C-2 Ⓒ
IC8001	B-2 Ⓕ
Test Point	
TP3001	C-4 Ⓒ
TP3002	B-1 Ⓒ
TP3003	C-4 Ⓒ
TP3004	C-4 Ⓒ
TP3005	B-3 Ⓒ
TP8001	C-2 Ⓒ
TP GND	B-2 Ⓒ
Adjustment	
VR3001	C-3 Ⓒ
VR5001	C-4 Ⓒ

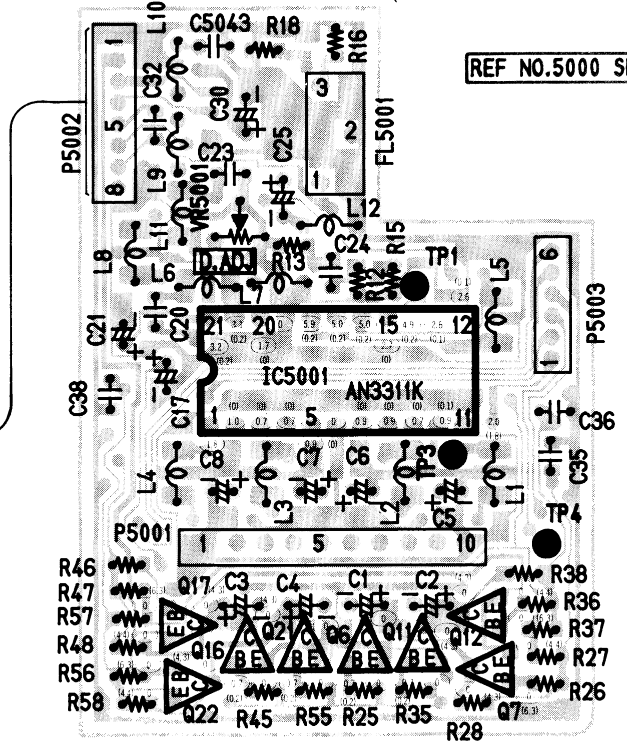
ADDRESS INFORMATION
Ⓒ ··· COMPONENT SIDE
Ⓕ ··· FOIL SIDE

UIT BOARD (VEP03297A, VEP05073B)

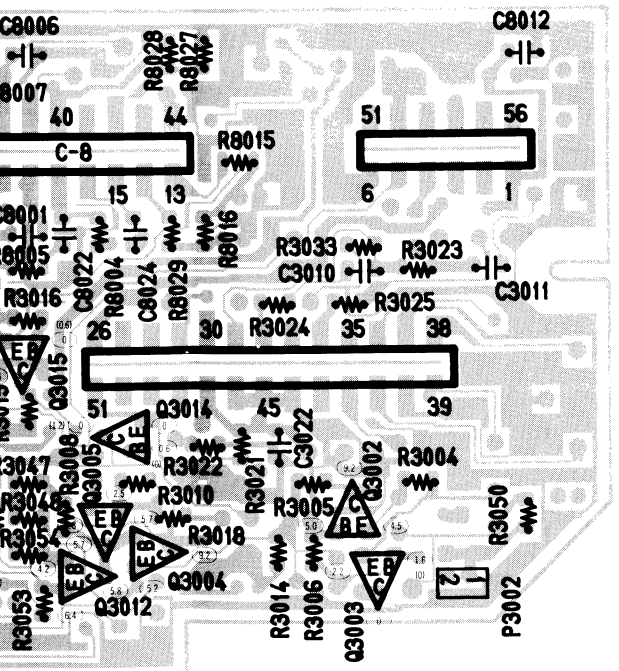
EP03297A) (COMPONENT SIDE)


C8009
C8004
R8001
QR8001
29
28
2
FL8003
3
1
R8035
R8034
C3034
R3002
P3001
1
4
REC CURRENT
R8006
C3009
C3007
C3006
R3042
R3041
R8031
R8032
C3008
C3005
10
15
5
65
70
76
VR3001
C3001
C3002
R3013
C3019
L3001
L3003
TP3005
P3004
1
5
8
C3023
R3037
R3038
C3031
R3036
L3010
5
10
12
L3009
Q3008
C3026
R3035
C3030
Q3009
C3029
L3011
L3008
JB

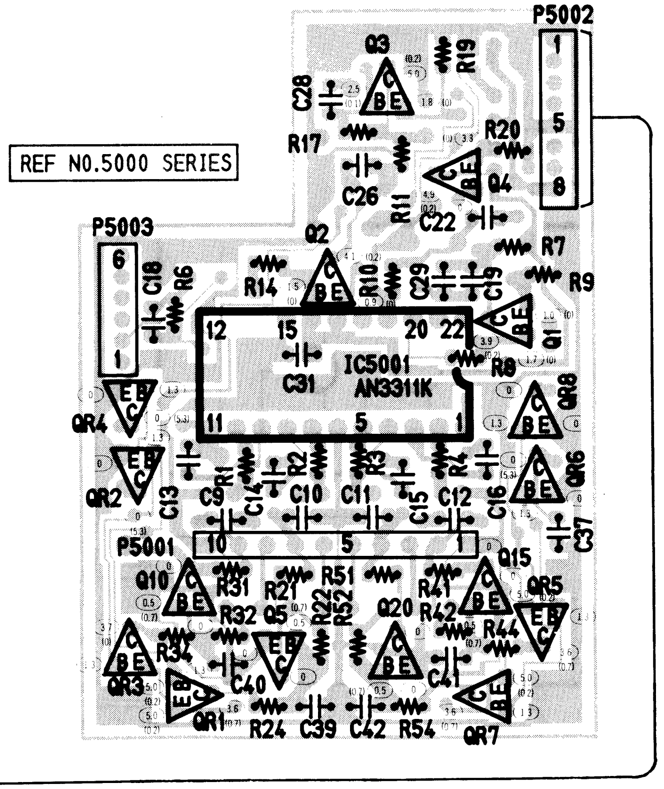
HEAD AMP CIRCUIT BOARD (VEP05073B)
(COMPONENT SIDE)


REF NO.5000 SERIES
P5002
1
5
8
L10
C5043
R18
R16
C32
C30
C23
C25
FL5001
3
2
1
L9
VR5001
L11
L12
C24
R15
TP1
L8
L6
L7
R13
R12
L5
P5003
6
1
C21
C20
21
20
15
12
IC5001
AN3311K
1
5
11
C38
C17
C36
C35
C8
C7
C6
TP3
L4
L3
L2
C5
L1
TP4
P5001
1
5
10
R46
R47
R57
R48
R56
R58
Q17
C3
C4
C1
C2
R38
R36
R37
R27
R26
Q16
Q2
Q6
Q11
Q12
Q22
R45
R55
R25
R35
Q7
R28

(FOIL SIDE)


C8006
C8012
R8028
R8027
8007
40
44
C-8
R8015
51
56
6
1
8001
8005
15
13
R8016
R3033
R3023
C3010
C3011
R3016
C8022
R8004
C8024
R8029
R3025
26
30
R3024
35
38
Q3015
51
Q3014
45
39
R3005
R3008
C3022
Q3002
R3004
R3047
R3022
R3010
R3021
R3048
R3005
R3018
R3050
R3054
Q3004
R3053
Q3012
R3014
R3006
Q3003
P3002
1
2

(FOIL SIDE)


REF NO.5000 SERIES
P5002
1
5
8
Q3
R19
C28
R17
R20
Q4
C26
R11
C22
R7
P5003
6
1
R6
C18
Q2
R14
R10
C29
C19
R9
12
15
20
22
IC5001
AN3311K
C31
11
5
1
Q1
R8
QR8
QR4
QR2
QR6
C13
R1
C9
C14
R2
C10
R3
C11
C15
R4
C12
C16
C37
P5001
10
5
1
Q15
Q10
R31
R21
R51
R41
QR5
R32
Q5
R22
R52
Q20
R42
R44
R34
C40
QR3
QR1
R24
C39
C42
R54
QR7

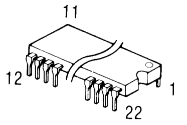
3

4

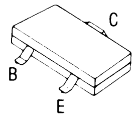
LUMINANCE, CHROMINANCE & HEAD AMP CIRCUIT BOARD	
Transistor	
Q3001	A-1 Ⓕ
Q3002	A-3 Ⓕ
Q3003	A-3 Ⓕ
Q3004	A-3 Ⓕ
Q3005	A-3 Ⓕ
Q3006	A-1 Ⓕ
Q3007	A-1 Ⓕ
Q3008	B-3 Ⓒ
Q3009	B-3 Ⓒ
Q3010	B-1 Ⓕ
Q3011	A-2 Ⓕ
Q3012	A-3 Ⓕ
Q3013	A-2 Ⓕ
Q3014	A-3 Ⓕ
Q3015	A-2 Ⓕ
Q5001	A-4 Ⓕ
Q5002	B-4 Ⓕ
Q5003	B-4 Ⓕ
Q5004	B-4 Ⓕ
Q5005	A-4 Ⓕ
Q5006	B-4 Ⓒ
Q5007	B-4 Ⓒ
Q5010	A-4 Ⓕ
Q5011	B-4 Ⓒ
Q5012	B-4 Ⓒ
Q5015	A-4 Ⓕ
Q5016	B-4 Ⓒ
Q5017	B-4 Ⓒ
Q5020	A-4 Ⓕ
Q5021	B-4 Ⓒ
Q5022	B-4 Ⓒ
Q8001	C-2 Ⓒ
Q8004	B-1 Ⓕ
Q8005	C-3 Ⓒ
Q8006	B-1 Ⓕ
Transistor & Resistor	
QR3001	B-2 Ⓒ
QR5001	A-4 Ⓕ
QR5002	A-4 Ⓕ
QR5003	A-4 Ⓕ
QR5004	A-4 Ⓕ
QR5005	A-4 Ⓕ
QR5006	A-4 Ⓕ
QR5007	A-4 Ⓕ
QR5008	A-4 Ⓕ
QR8001	C-2 Ⓒ
QR8002	B-2 Ⓕ
QR8003	B-2 Ⓕ
Integrated Circuit	
IC3001	C-2 Ⓒ
IC3001	A-2 Ⓕ
IC5001	C-4 Ⓒ
IC5001	A-4 Ⓕ
IC8001	C-2 Ⓒ
IC8001	B-2 Ⓕ
Test Point	
TP3001	C-4 Ⓒ
TP3002	B-1 Ⓒ
TP3003	C-4 Ⓒ
TP3004	C-4 Ⓒ
TP3005	B-3 Ⓒ
TP8001	C-2 Ⓒ
TP GND	B-2 Ⓒ
Adjustment	
VR3001	C-3 Ⓒ
VR5001	C-4 Ⓒ

ADDRESS INFORMATION
Ⓒ ··· COMPONENT SIDE
Ⓕ ··· FOIL SIDE

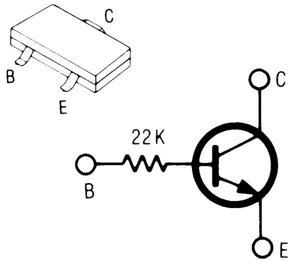
ICs & TRANSISTORs INFORMATION



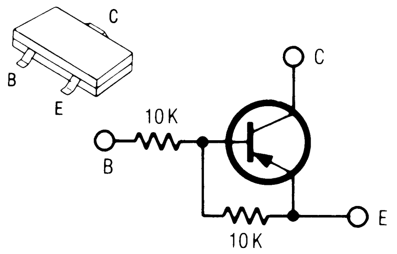
AN3311K



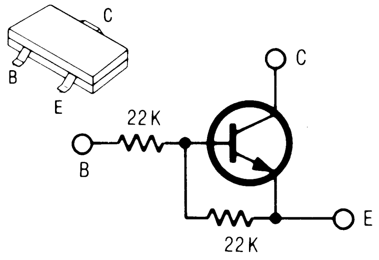
2SC1621
2SD602
2SB710
2SD601
2SC2404
2SB709
2SD1328



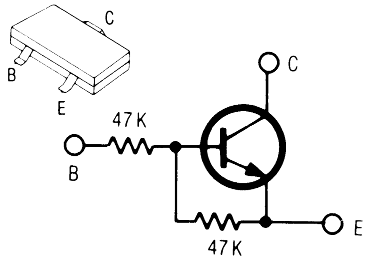
UN2217


C
B
E
10K
B
C
10K
E

UN2111

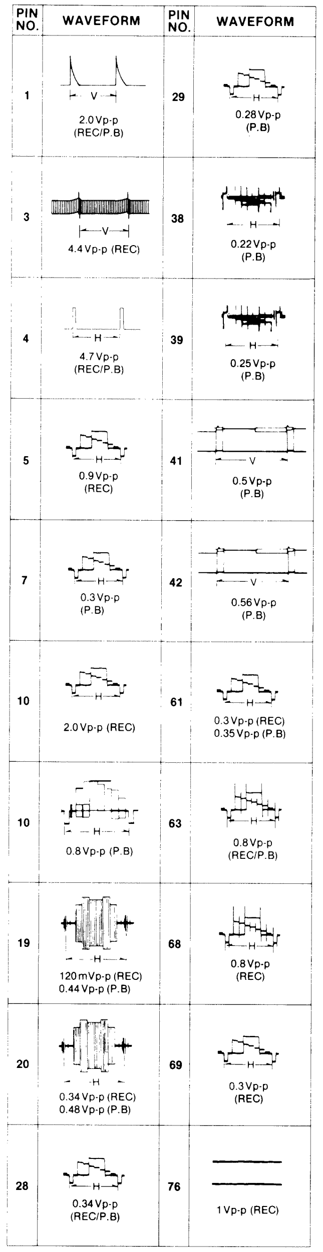

C
B
E
22K
B
C
22K
E

UN2212


C
B
E
47K
B
C
47K
E

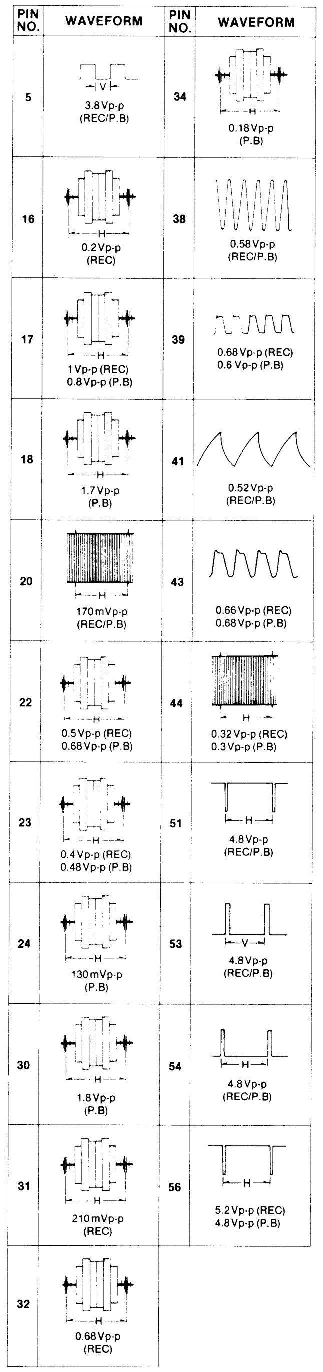
UN2213

IC3001 (VEFY007)



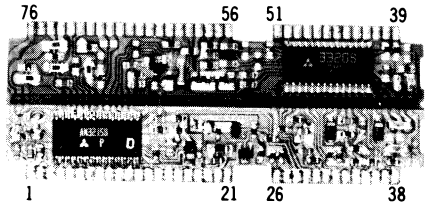
PIN NO.	WAVEFORM	PIN NO.	WAVEFORM
1	2.0Vp-p (REC/P.B)	29	0.28Vp-p (P.B)
3	4.4Vp-p (REC)	38	0.22Vp-p (P.B)
4	4.7Vp-p (REC/P.B)	39	0.25Vp-p (P.B)
5	0.9Vp-p (REC)	41	0.5Vp-p (P.B)
7	0.3Vp-p (P.B)	42	0.56Vp-p (P.B)
10	2.0Vp-p (REC)	61	0.3Vp-p (REC) 0.35Vp-p (P.B)
10	0.8Vp-p (P.B)	63	0.8Vp-p (REC/P.B)
19	120mVp-p (REC) 0.44Vp-p (P.B)	68	0.8Vp-p (REC)
20	0.34Vp-p (REC) 0.48Vp-p (P.B)	69	0.3Vp-p (REC)
28	0.34Vp-p (REC/P.B)	76	1Vp-p (REC)

IC8001 (VEFC009)

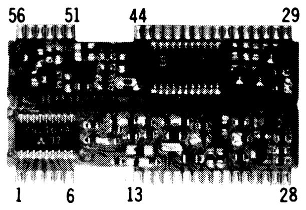


PIN NO.	WAVEFORM	PIN NO.	WAVEFORM
5	3.8Vp-p (REC/P.B)	34	0.18Vp-p (P.B)
16	0.2Vp-p (REC)	38	0.58Vp-p (REC/P.B)
17	1Vp-p (REC) 0.8Vp-p (P.B)	39	0.68Vp-p (REC) 0.6 Vp-p (P.B)
18	1.7Vp-p (P.B)	41	0.52Vp-p (REC/P.B)
20	170mVp-p (REC/P.B)	43	0.66Vp-p (REC) 0.68Vp-p (P.B)
22	0.5Vp-p (REC) 0.68Vp-p (P.B)	44	0.32Vp-p (REC) 0.3Vp-p (P.B)
23	0.4Vp-p (REC) 0.48Vp-p (P.B)	51	4.8Vp-p (REC/P.B)
24	130mVp-p (P.B)	53	4.8Vp-p (REC/P.B)
30	1.8Vp-p (P.B)	54	4.8Vp-p (REC/P.B)
31	210mVp-p (REC)	56	5.2Vp-p (REC) 4.8Vp-p (P.B)
32	0.68Vp-p (REC)		

VEFY007


76
56
51
39
1
21
26
38

VEFC009

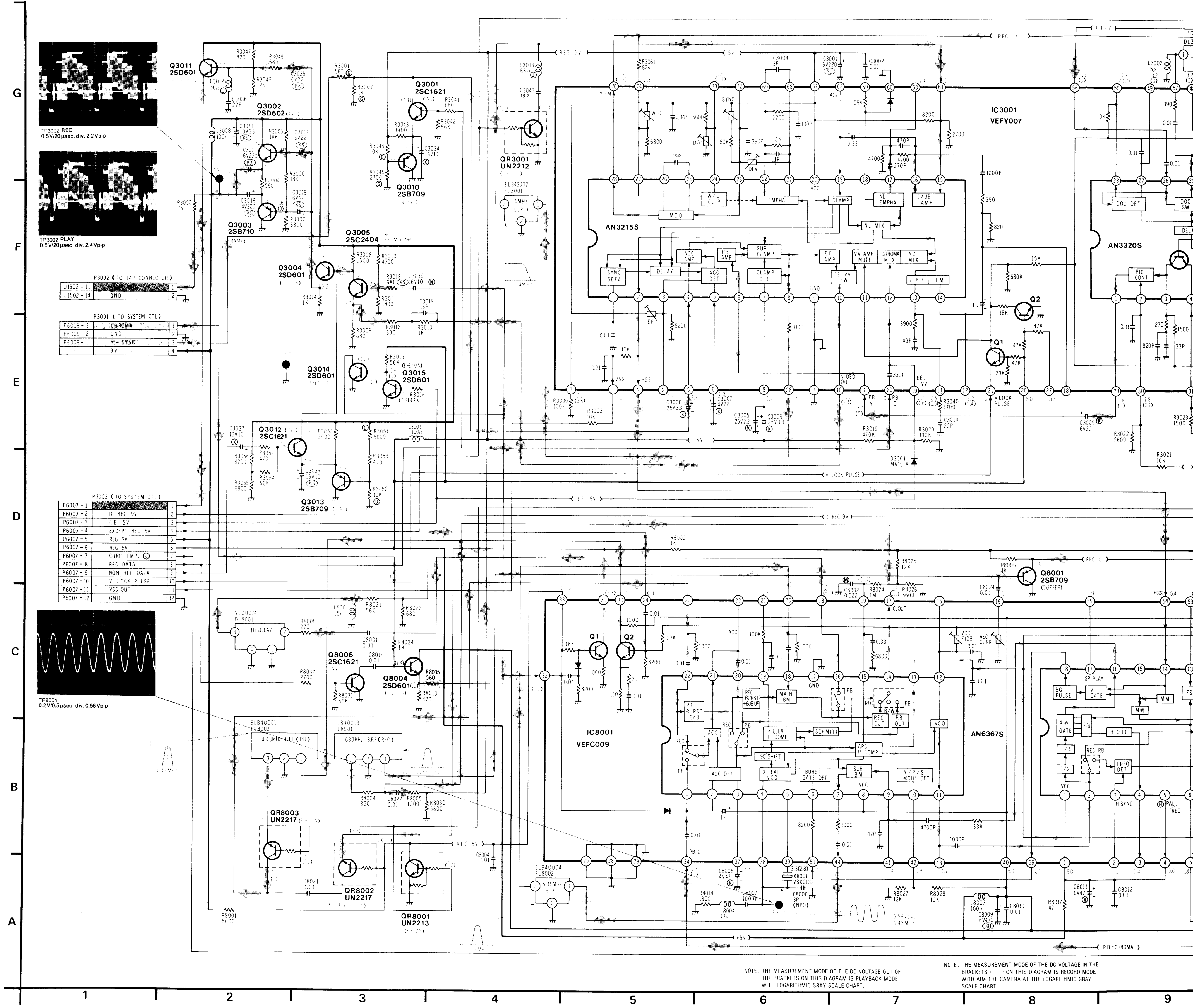

56
51
44
29
1
6
13
28

LUMINANCE, CHROMINANCE & HEAD AMP SCHEMATIC	
Transistor	
Q3001	G-3
Q3002	G-2
Q3003	F-2
Q3004	F-3
Q3005	F-3
Q3006	C-11
Q3007	B-11
Q3008	C-12
Q3009	B-12
Q3010	F-3
Q3011	G-2
Q3012	E-2
Q3013	E-3
Q3014	E-3
Q3015	E-3
Q5001	A-16
Q5002	A-15
Q5003	A-13
Q5004	A-15
Q5005	G-16
Q5006	G-15
Q5007	G-15
Q5010	F-16
Q5011	F-15
Q5012	F-15
Q5015	E-16
Q5016	E-15
Q5017	E-15
Q5020	D-15
Q5021	D-15
Q5022	E-15
Q8001	D-8
Q8004	C-3
Q8006	C-3
Transistor & Resistor	
QR3001	G-4
QR5001	G-14
QR5002	G-15
QR5003	F-14
QR5004	F-15
QR5005	E-14
QR5006	E-15
QR5007	D-14
QR5008	D-15
QR8001	A-1
QR8002	A-1
QR8003	B-2
Integrated Circuit	
IC3001	G-8
IC5001	C-17
IC8001	B-5
Test Point	
TP3001	B-15
TP3002	G-2
TP3003	C-15
TP3004	F-16
TP3005	A-12
TP8001	A-16
TP GND	E-2
Adjustment	
VR3001	G-12
VR5001	A-17
Connector	
P3001	F-1
P3002	F-1
P3003	D-1
P3004	E-12
P5001	E-17
P5002	E-13
P5003	G-13

ADDRESS INFORMATION

3-24. LUMINANCE, CHROMINANCE & HEAD AMP SCHEMATIC DIAGRAM

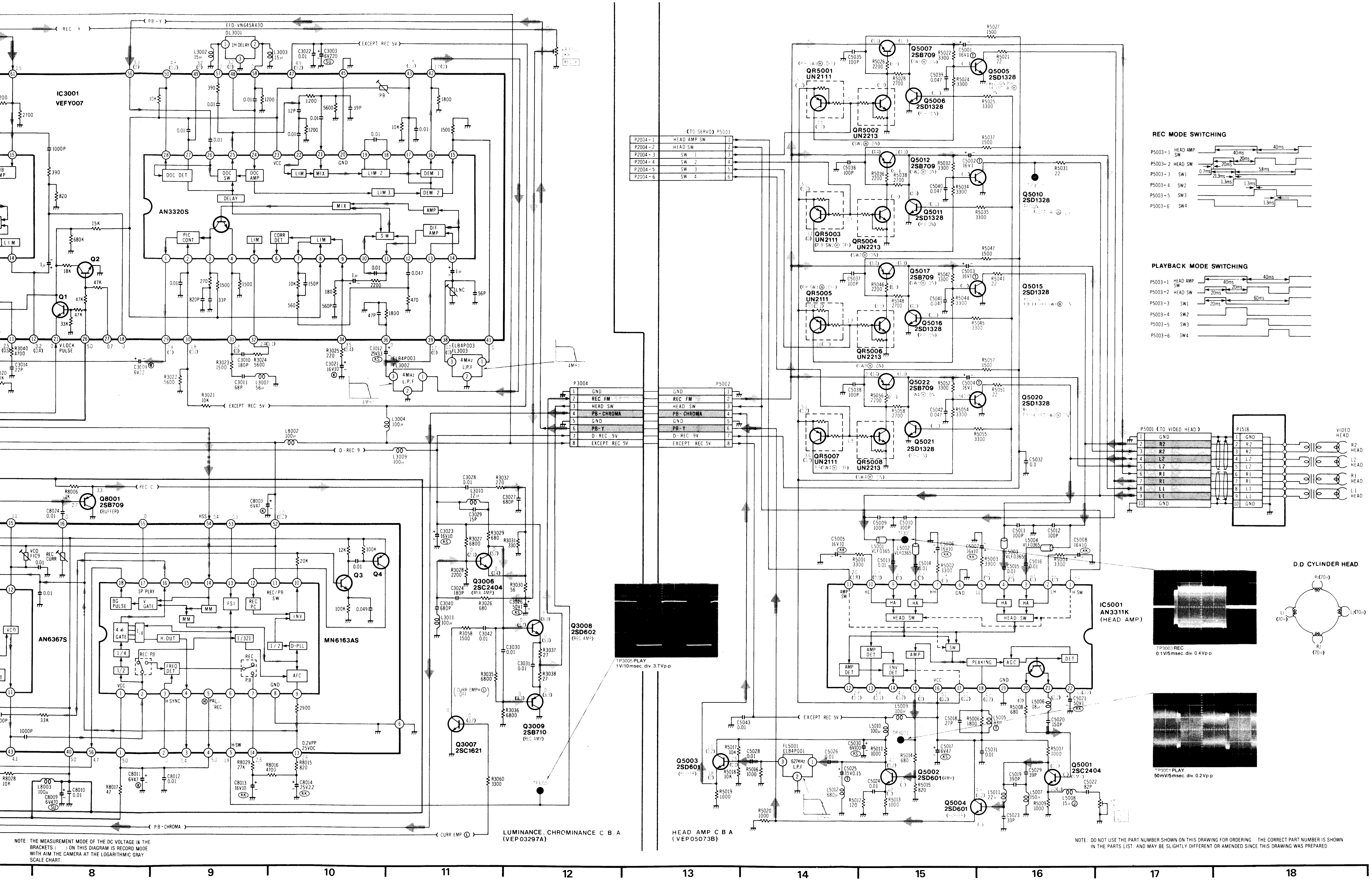
MAIN SIGNAL PATH IN REC MODE   MAIN SIGNAL PATH IN PLAYBACK MODE   5.06MHz PHASE ROTATIONAL SIGNAL PAT


TP3002 REC
0.5V/20μsec. div. 2.2Vp-p
TP3002 PLAY
0.5V/20μsec. div. 2.4Vp-p
TP8001
0.2V/0.5μsec. div. 0.56Vp-p
P3002 (TO 14P CONNECTOR)
J1502-11 VIDEO OUT
J1502-14 GND
P3001 (TO SYSTEM CTL)
P6009-3 CHROMA
P6009-2 GND
P6009-1 Y+SYNC
9V
P3003 (TO SYSTEM CTL)
P6007-1 Y/C OUT
P6007-2 D-REC 9V
P6007-3 EE 5V
P6007-4 EXCEPT REC 5V
P6007-5 REG 9V
P6007-6 REG 5V
P6007-7 CURR. EMP.
P6007-8 REC DATA
P6007-9 NON REC DATA
P6007-10 V-LOCK PULSE
P6007-11 VSS OUT
P6007-12 GND
Q3011 2SD601
Q3002 2SD602
Q3003 2SB710
Q3001 2SC1621
Q3010 2SB709
QR3001 UN2212
Q3005 2SC2404
Q3004 2SD601
Q3014 2SD601
Q3015 2SD601
Q3012 2SC1621
Q3013 2SB709
AN3215S
IC3001 VEFY007
AN3320S
Q8001 2SB709
Q8006 2SC1621
Q8004 2SD601
QR8003 UN2217
QR8002 UN2217
QR8001 UN2213
IC8001 VEFC009
AN6367S
DL8001 1H DELAY
FL8001 4.43MHz BPF (PB)
FL8001 630kHz BPF (REC)
FL8002 5.06MHz B.P.F
X8001 VSX0132
MOD
W/D CLIP
EMPHA
CLAMP
NL EMPHA
12dB AMP
NL MIX
SYNC SEPA
DELAY
AGC AMP
AGC DET
PB AMP
SUB CLAMP
CLAMP DET
EE AMP
EE/VV SW
VV AMP MUTE
CHROMA MIX
NC MIX
L P F
L I M
DOC DET
PIC CONT
PB BURST 6dB
REC BURST 6dB UP
MAIN BM
ACC
KILLER P-COMP
SCHMITT
APC P-COMP
90°SHIFT
ACC DET
X'TAL VCO
BURST GATE DET
SUB BM
N P/S MODE DET
REC OUT
PB OUT
VCO
BG PULSE
V GATE
MM
4 6 GATE
H.OUT
1/4
1/2
FREQ DET
SP PLAY
V LOCK PULSE
REC Y
PB Y
PB-CHROMA
REC 5V
EE 5V
D REC 9V
V LOCK PULSE
1 2 3 4 5 6 7 8 9
A B C D E F G

NOTE: THE MEASUREMENT MODE OF THE DC VOLTAGE OUT OF THE BRACKETS ON THIS DIAGRAM IS PLAYBACK MODE WITH LOGARITHMIC GRAY SCALE CHART

NOTE: THE MEASUREMENT MODE OF THE DC VOLTAGE IN THE BRACKETS ( ) ON THIS DIAGRAM IS RECORD MODE WITH AIM THE CAMERA AT THE LOGARITHMIC GRAY SCALE CHART

Hz PHASE ROTATIONAL SIGNAL PATH IN REC MODE ◄·· 5.06MHz PHASE ROTATIONAL SIGNAL PATH IN PLAYBACK MODE

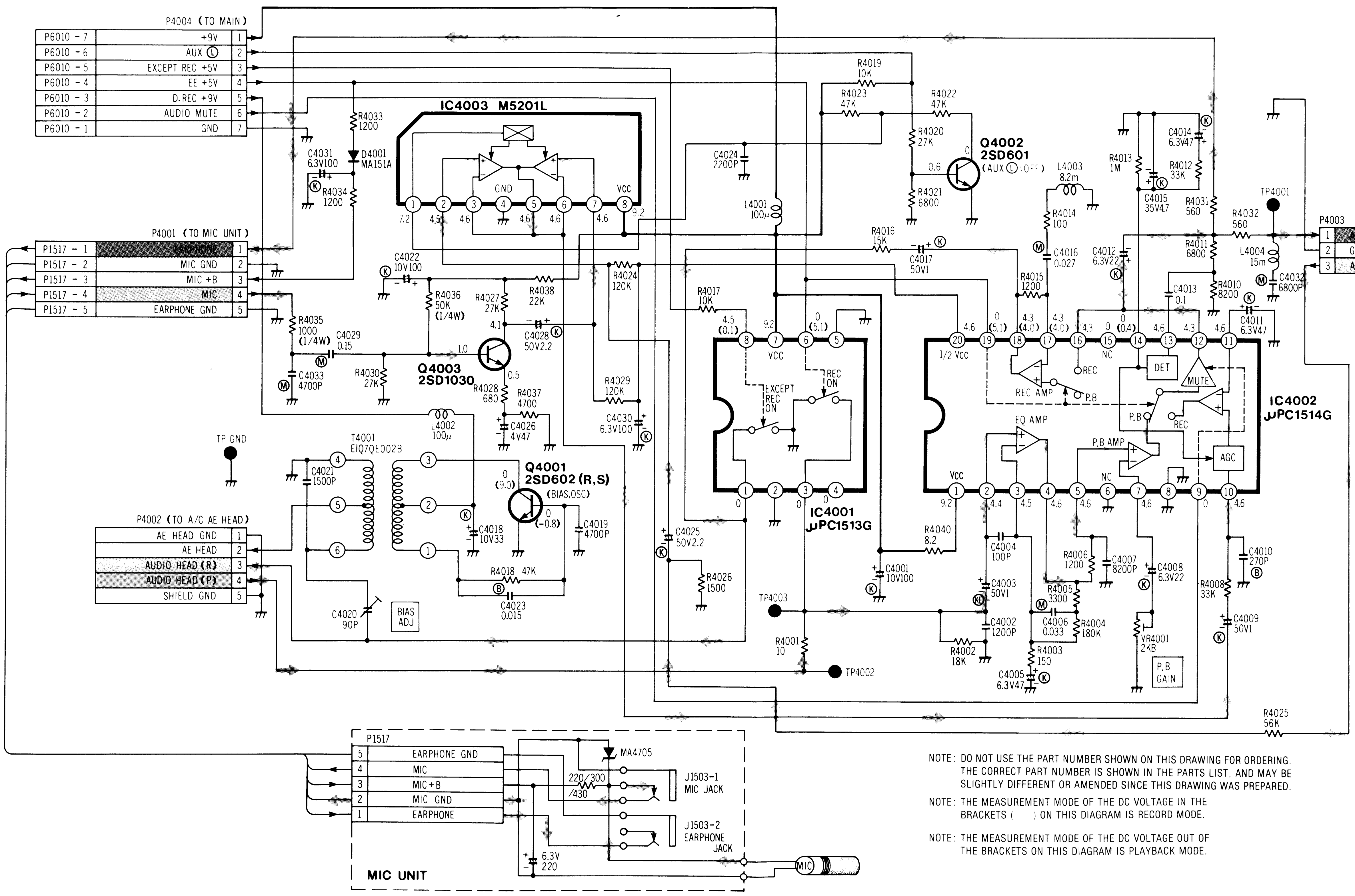

IC3001
VEFY007
AN3320S
DL3001
EFD-VN645A43D
1H DELAY
DOC DET
DOC SW
DOC AMP
LIM
MIX
LIM 2
DEM 1
LIM 3
DEM 2
DELAY
AMP
DIF AMP
PIC CONT
CORR DET
SW
Q1
Q2
V LOCK PULSE
EXCEPT REC 5V
REC Y
PB-Y
4MHz L.P.F
ELB4P003
FL3002
FL3003
L3004
L3009
L8002
D-REC 9
REC C
Q8001
2SB709
(BUFFER)
AN6367S
VCO
MN6163AS
BG PULSE
V GATE
MM
FSI
REC PC
REC/PB SW
INV
H.OUT
1/321
1/2
D-PLL
FREQ DET
AFC
4/4 GATE
1/4
Q3
Q4
H SYNC
PAL REC
PB-CHROMA
CURR EMP
Q3006
2SC2404
(MIX AMP)
Q3008
2SD602
(REC AMP)
Q3009
2SB710
(REC AMP)
Q3007
2SC1621
P3004
GND
REC FM
HEAD SW
PB-CHROMA
PB-Y
D-REC 9V
EXCEPT REC 5V
P5002
(TO SERVO) P5003
P2004-1 HEAD AMP SW
P2004-2 HEAD SW
P2004-3 SW 1
P2004-4 SW 2
P2004-5 SW 3
P2004-6 SW 4
TP3005 PLAY
1V/10msec. div. 3.7Vp-p
LUMINANCE, CHROMINANCE C.B.A
(VEP03297A)
HEAD AMP C.B.A
(VEP05073B)
QR5001 UN2111
QR5002 UN2213
QR5003 UN2111
QR5004 UN2213
QR5005 UN2111
QR5006 UN2213
QR5007 UN2111
QR5008 UN2213
Q5007 2SB709
Q5005 2SD1328
Q5006 2SD1328
Q5012 2SB709
Q5010 2SD1328
Q5011 2SD1328
Q5017 2SB709
Q5015 2SD1328
Q5016 2SD1328
Q5022 2SB709
Q5020 2SD1328
Q5021 2SD1328
REC MODE SWITCHING
P5003-1 HEAD AMP SW
P5003-2 HEAD SW
P5003-3 SW1
P5003-4 SW2
P5003-5 SW3
P5003-6 SW4
40ms
20ms
58ms
0.7ms
21.3ms
1.3ms
PLAYBACK MODE SWITCHING
60ms
P5001 (TO VIDEO HEAD)
P1518
R2
L2
R1
L1
VIDEO HEAD
R2 HEAD
L2 HEAD
R1 HEAD
L1 HEAD
D.D CYLINDER HEAD
IC5001
AN3311K
(HEAD AMP)
HA
HEAD SW
AMP DET
ENV DET
AMP
PEAKING
AGC
DET
TP5003 REC
0.1V/5msec. div. 0.4Vp-p
TP5001 PLAY
50mV/5msec. div. 0.2Vp-p
Q5003 2SD601
Q5002 2SD601
Q5004 2SD601
Q5001 2SC2404
FL5001 ELB4P001
627KHz L.P.F
8
9
10
11
12
13
14
15
16
17
18

NOTE: THE MEASUREMENT MODE OF THE DC VOLTAGE IN THE BRACKETS ( ) ON THIS DIAGRAM IS RECORD MODE WITH AIM THE CAMERA AT THE LOGARITHMIC GRAY SCALE CHART.

NOTE: DO NOT USE THE PART NUMBER SHOWN ON THIS DRAWING FOR ORDERING. THE CORRECT PART NUMBER IS SHOWN IN THE PARTS LIST. AND MAY BE SLIGHTLY DIFFERENT OR AMENDED SINCE THIS DRAWING WAS PREPARED.

3-25. AUDIO SCHEMATIC DIAGRAM

MAIN SIGNAL PATH IN REC MODE
MAIN SIGNAL PATH IN PLAYBACK MODE



P4004 (TO MAIN)
P6010 - 7 +9V 1
P6010 - 6 AUX Ⓛ 2
P6010 - 5 EXCEPT REC +5V 3
P6010 - 4 EE +5V 4
P6010 - 3 D.REC +9V 5
P6010 - 2 AUDIO MUTE 6
P6010 - 1 GND 7
P4001 (TO MIC UNIT)
P1517 - 1 EARPHONE 1
P1517 - 2 MIC GND 2
P1517 - 3 MIC +B 3
P1517 - 4 MIC 4
P1517 - 5 EARPHONE GND 5
P4002 (TO A/C AE HEAD)
AE HEAD GND 1
AE HEAD 2
AUDIO HEAD (R) 3
AUDIO HEAD (P) 4
SHIELD GND 5
IC4003 M5201L
GND
VCC
R4033 1200
D4001 MA151A
C4031 6.3V100
R4034 1200
C4022 10V100
R4036 50K (1/4W)
R4027 27K
R4038 22K
R4024 120K
C4028 50V2.2
R4035 1000 (1/4W)
C4029 0.15
C4033 4700P
R4030 27K
Q4003 2SD1030
R4028 680
R4037 4700
C4026 4V47
R4029 120K
C4030 6.3V100
L4002 100μ
T4001 EIQ7QE002B
C4021 1500P
Q4001 2SD602 (R,S) (BIAS.OSC)
C4018 10V33
C4019 4700P
R4018 47K
C4023 0.015
C4020 90P
BIAS ADJ
TP GND
C4024 2200P
L4001 100μ
R4019 10K
R4023 47K
R4022 47K
R4020 27K
R4021 6800
Q4002 2SD601 (AUX Ⓛ:OFF)
R4016 15K
C4017 50V1
R4017 10K
EXCEPT REC ON
REC ON
IC4001 μPC1513G
C4025 50V2.2
R4026 1500
C4001 10V100
R4040 8.2
TP4003
R4001 10
TP4002
L4003 8.2m
R4014 100
C4016 0.027
C4012 6.3V22
R4015 1200
R4013 1M
C4014 6.3V47
R4012 33K
C4015 35V4.7
R4031 560
R4011 6800
C4013 0.1
R4010 8200
C4011 6.3V47
TP4001
R4032 560
L4004 15m
C4032 6800P
P4003 (TO 14P CONNECTOR)
AUDIO OUT 1 J1502 - 12
GND 2 J1502 - 13
AUDIO IN 3 J1502 - 5
1/2 VCC
REC AMP
REC
P.B
NC
DET
MUTE
EQ AMP
P.B AMP
AGC
IC4002 μPC1514G
C4004 100P
C4003 50V1
C4002 1200P
R4002 18K
R4006 1200
C4007 8200P
C4008 6.3V22
R4005 3300
C4006 0.033
R4004 180K
R4003 150
C4005 6.3V47
VR4001 2KB
P.B GAIN
C4010 270P
R4008 33K
C4009 50V1
R4025 56K
P1517
EARPHONE GND
MIC
MIC+B
MIC GND
EARPHONE
MA4705
220/300 /430
J1503-1 MIC JACK
J1503-2 EARPHONE JACK
6.3V 220
MIC
MIC UNIT

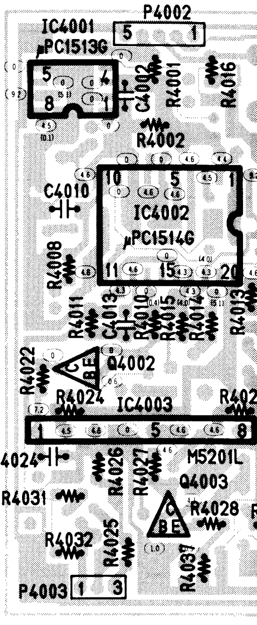
NOTE: DO NOT USE THE PART NUMBER SHOWN ON THIS DRAWING FOR ORDERING. THE CORRECT PART NUMBER IS SHOWN IN THE PARTS LIST, AND MAY BE SLIGHTLY DIFFERENT OR AMENDED SINCE THIS DRAWING WAS PREPARED.

NOTE: THE MEASUREMENT MODE OF THE DC VOLTAGE IN THE BRACKETS ( ) ON THIS DIAGRAM IS RECORD MODE.

NOTE: THE MEASUREMENT MODE OF THE DC VOLTAGE OUT OF THE BRACKETS ON THIS DIAGRAM IS PLAYBACK MODE.

3-26. AUDIO

AUDIO CIRCUIT B

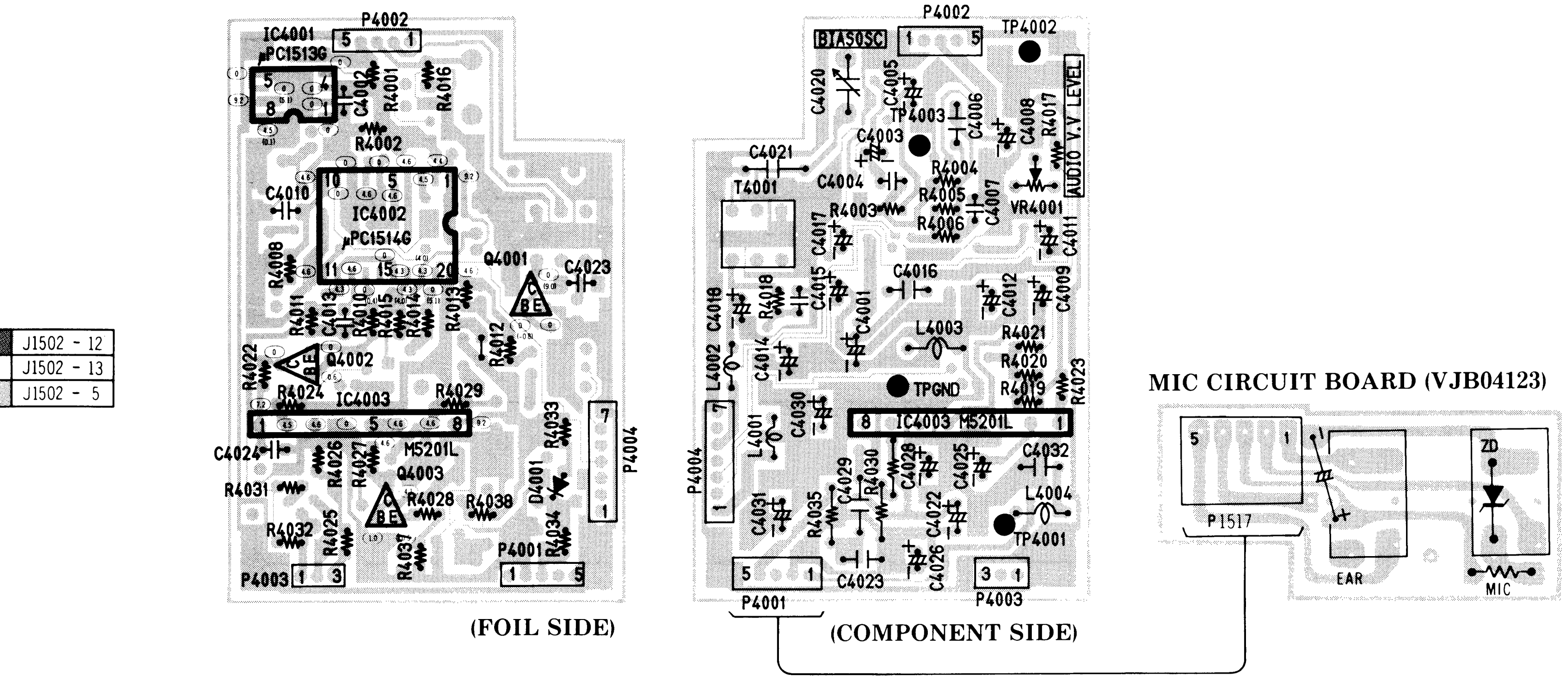


P4002
IC4001 μPC1513G
R4001
R4016
R4002
C4010
IC4002 μPC1514G
R4008
Q4002
C4024
R4024
IC4003
M5201L
Q4003
R4031
R4028
R4032
R4025
P4003

B
E
2SD6
2SD6
2SD1

Back Page:
LUMINANCE, CHROMINANCE & HEAD AMP Section

3-26. AUDIO CIRCUIT BOARD (VEP04131B)


AUDIO CIRCUIT BOARD (VEP04131B)

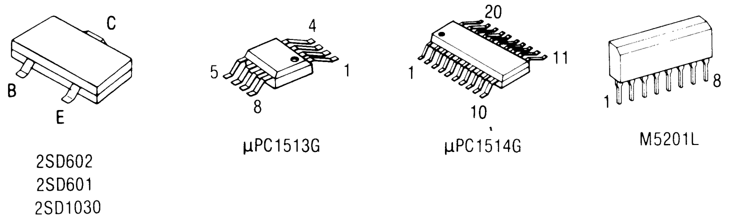
J1502 - 12
J1502 - 13
J1502 - 5
P4002
IC4001
μPC1513G
R4001
R4016
R4002
C4010
IC4002
μPC1514G
Q4001
C4023
R4008
R4011
R4012
R4013
R4022
Q4002
R4024
IC4003
R4029
C4024
M5201L
Q4003
R4031
R4028
R4038
D4001
R4033
R4034
R4032
R4025
R4037
P4001
P4003
P4004
BIAS0SC
TP4002
C4020
C4005
TP4003
C4006
C4008
R4017
AUDIO V.Y LEVEL
C4021
T4001
C4003
R4004
C4004
R4005
R4003
R4006
C4007
VR4001
C4011
C4017
C4016
C4018
R4018
C4015
C4001
C4012
C4009
L4002
C4014
L4003
R4021
R4020
R4019
R4023
TPGND
L4001
C4030
IC4003 M5201L
C4032
C4029
R4030
C4028
C4025
L4004
C4031
R4035
C4022
TP4001
C4023
C4026
P1517
ZD
EAR
MIC

MIC CIRCUIT BOARD (VJB04123)

(FOIL SIDE)

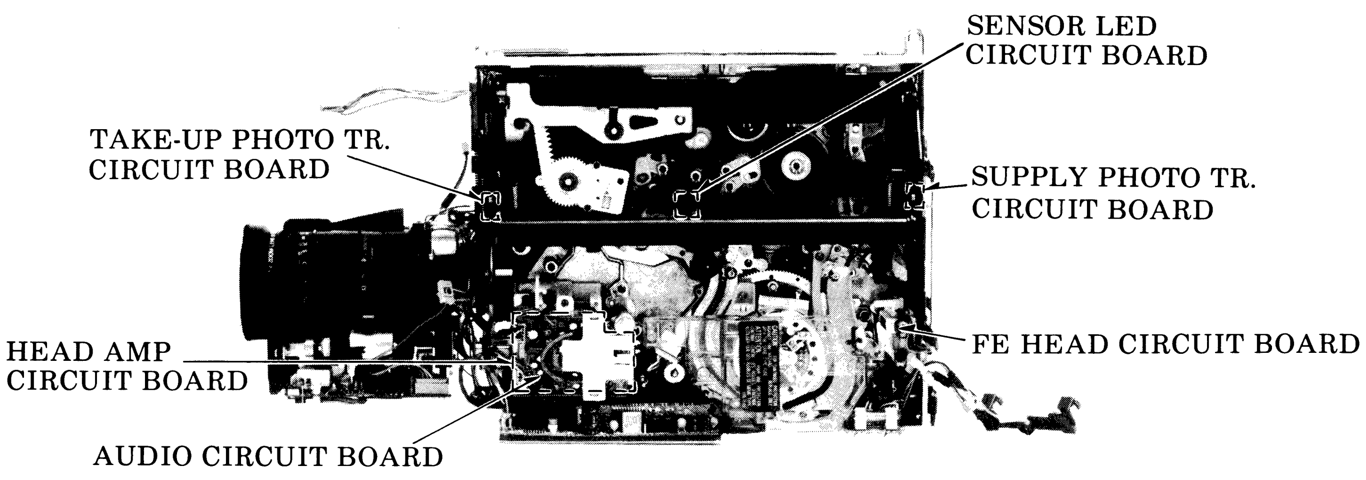
(COMPONENT SIDE)

ICs & TRANSISTORs INFORMATION

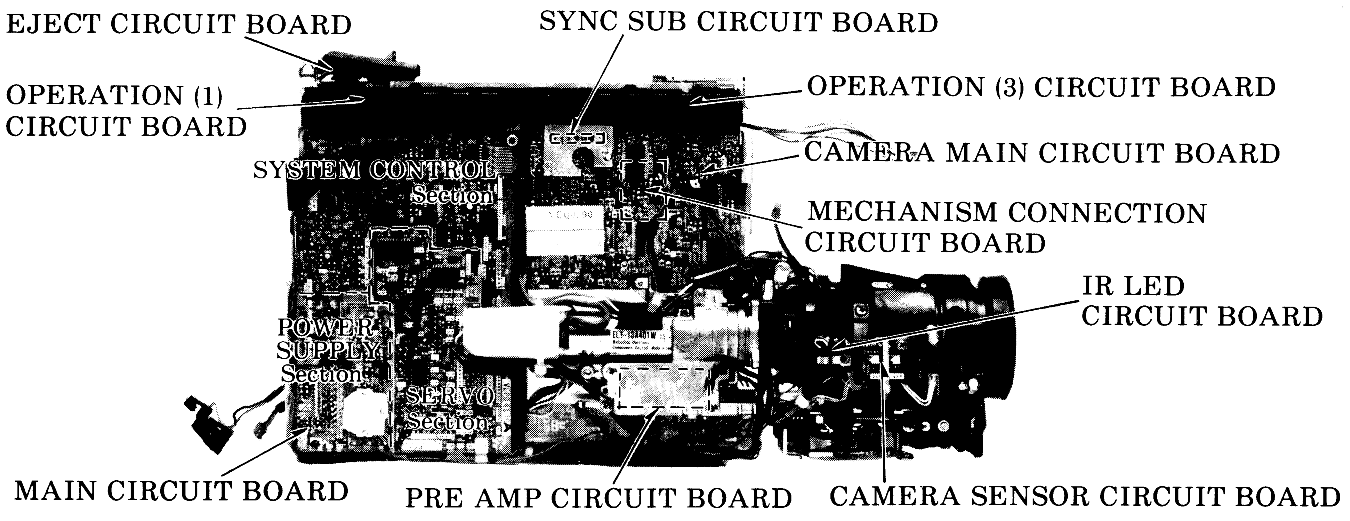

C
B
E
2SD602
2SD601
2SD1030
4
5
1
8
μPC1513G
20
11
1
10
μPC1514G
1
8
M5201L

3-27. CIRCUIT BOARD LAYOUT

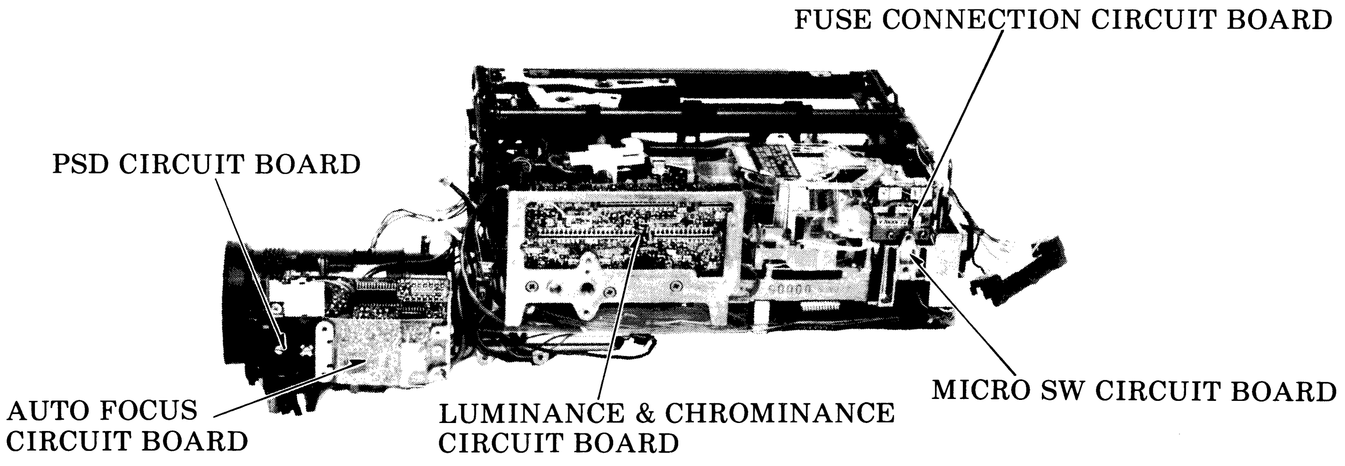
TOP VIEW


SENSOR LED CIRCUIT BOARD
TAKE-UP PHOTO TR. CIRCUIT BOARD
SUPPLY PHOTO TR. CIRCUIT BOARD
HEAD AMP CIRCUIT BOARD
FE HEAD CIRCUIT BOARD
AUDIO CIRCUIT BOARD

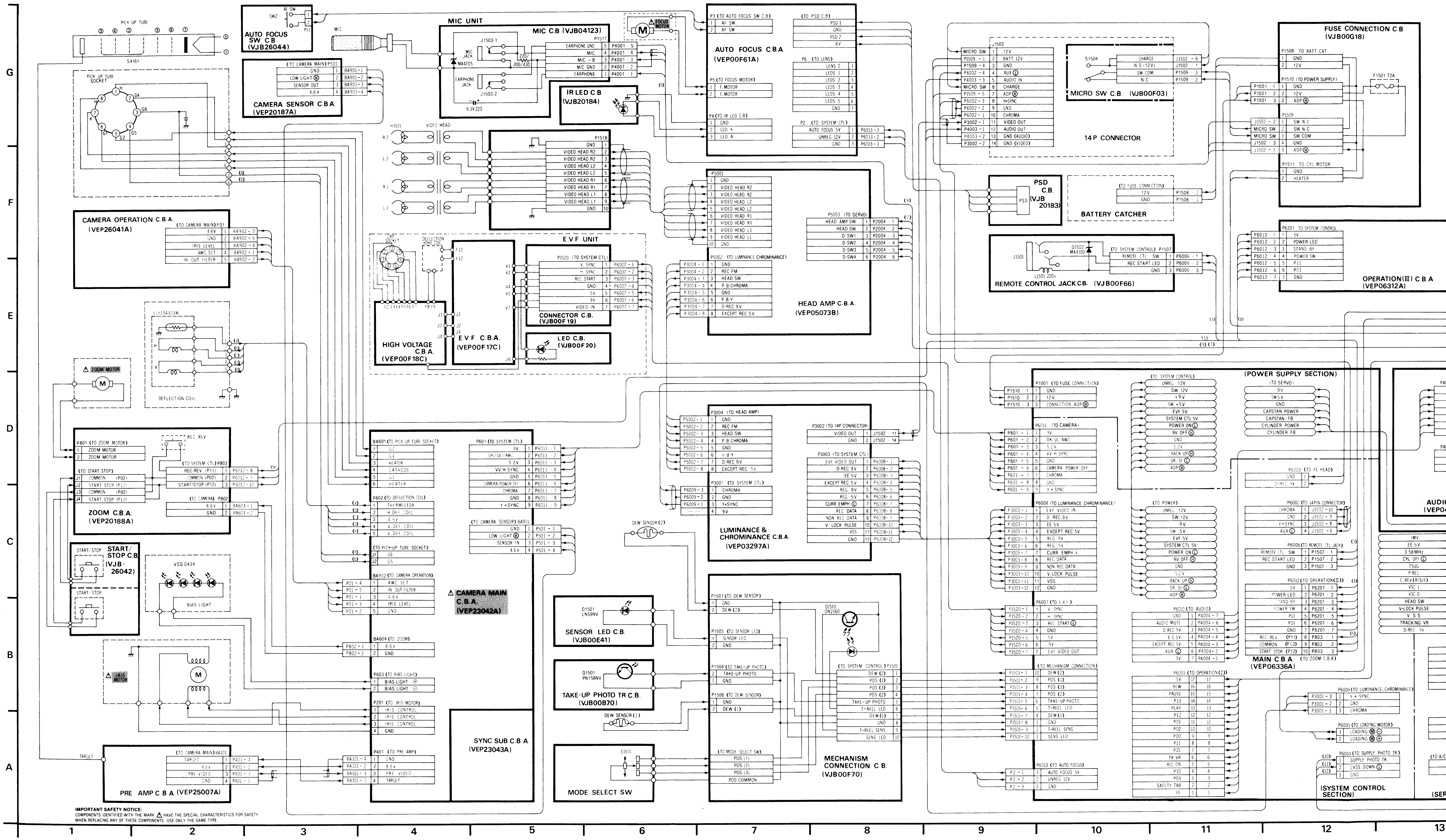
BOTTOM VIEW


EJECT CIRCUIT BOARD
SYNC SUB CIRCUIT BOARD
OPERATION (1) CIRCUIT BOARD
OPERATION (3) CIRCUIT BOARD
SYSTEM CONTROL Section
CAMERA MAIN CIRCUIT BOARD
MECHANISM CONNECTION CIRCUIT BOARD
IR LED CIRCUIT BOARD
POWER SUPPLY Section
SERVO Section
MAIN CIRCUIT BOARD
PRE AMP CIRCUIT BOARD
CAMERA SENSOR CIRCUIT BOARD

REAR VIEW


FUSE CONNECTION CIRCUIT BOARD
PSD CIRCUIT BOARD
MICRO SW CIRCUIT BOARD
AUTO FOCUS CIRCUIT BOARD
LUMINANCE & CHROMINANCE CIRCUIT BOARD

3-28. INTERCONNECTION SCHEMATIC DIAGRAM


G
F
E
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A
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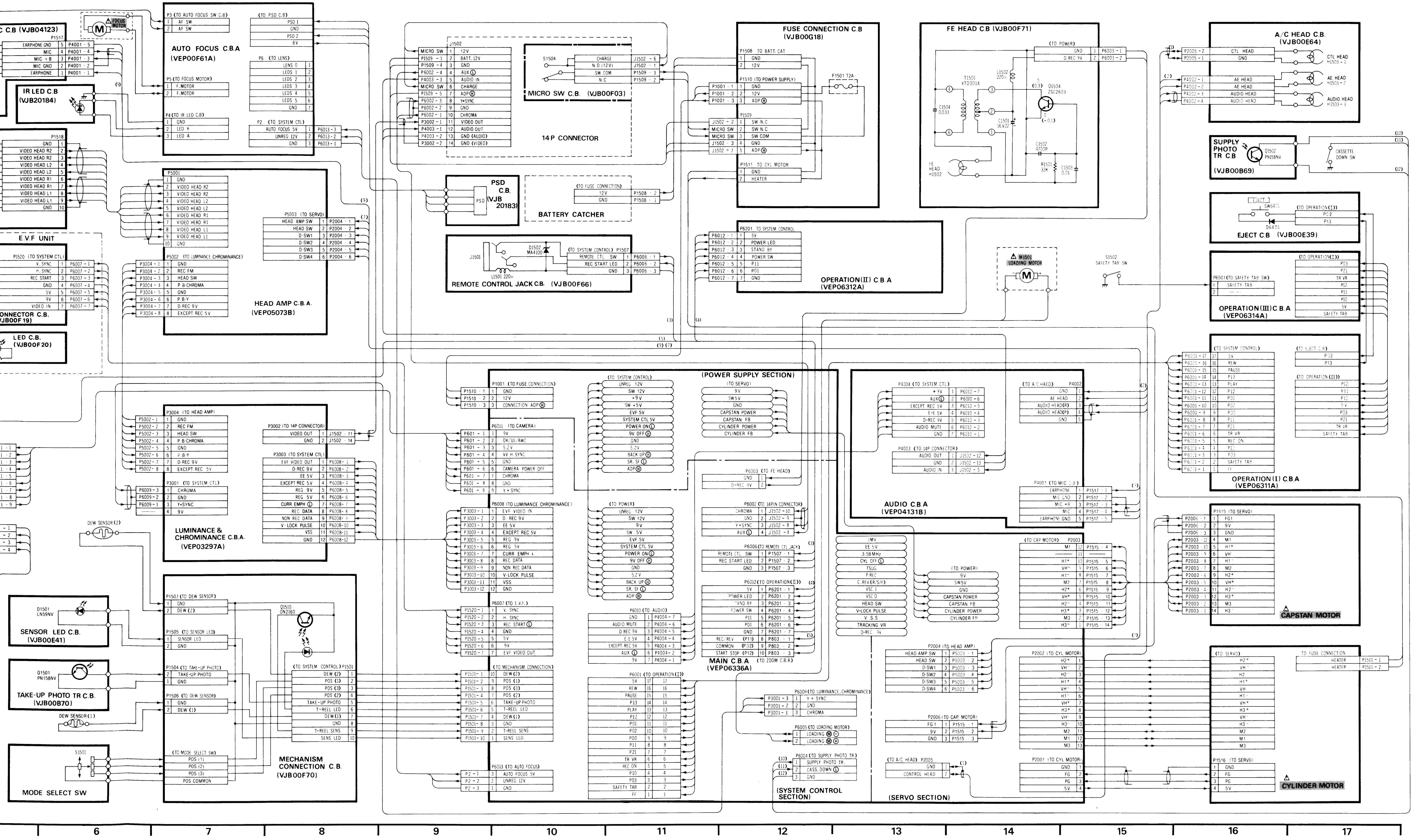
9
10
11
12
13
PICK UP TUBE
PICK UP TUBE SOCKET
AUTO FOCUS SW C.B (VJB26044)
CAMERA SENSOR C.B.A. (VEP20187A)
MIC
MIC UNIT
MIC C.B (VJB04123)
IR LED C.B (VJB20184)
FOCUS MOTOR
AUTO FOCUS C.B.A (VEP00F61A)
H1501
VIDEO HEAD
CAMERA OPERATION C.B.A. (VEP26041A)
E.V.F UNIT
CONNECTOR C.B. (VJB00F19)
LED C.B. (VJB00F20)
HIGH VOLTAGE C.B.A. (VEP00F18C)
E.V.F C.B.A. (VEP00F17C)
HEAD AMP C.B.A. (VEP05073B)
ZOOM MOTOR
DEFLECTION COIL
ZOOM C.B.A. (VEP20188A)
START/STOP C.B (VJB-26042)
BIAS LIGHT
IRIS MOTOR
CAMERA MAIN C.B.A. (VEP23042A)
SYNC SUB C.B.A. (VEP23043A)
PRE AMP C.B.A (VEP25007A)
LUMINANCE & CHROMINANCE C.B.A. (VEP03297A)
DEW SENSOR (2)
DEW SENSOR (1)
SENSOR LED C.B. (VJB00E41)
TAKE-UP PHOTO TR C.B. (VJB00B70)
MODE SELECT SW
MECHANISM CONNECTION C.B. (VJB00F70)
14P CONNECTOR
MICRO SW C.B (VJB00F03)
PSD C.B. (VJB 20183)
BATTERY CATCHER
REMOTE CONTROL JACK C.B. (VJB00F66)
FUSE CONNECTION C.B (VJB00G18)
F1501 T2A
OPERATION(II) C.B.A (VEP06312A)
(POWER SUPPLY SECTION)
MAIN C.B.A (VEP06336A)
(SYSTEM CONTROL SECTION)
AUDI
(VEP0
(SER

IMPORTANT SAFETY NOTICE:
COMPONENTS IDENTIFIED WITH THE MARK ⚠ HAVE THE SPECIAL CHARACTERISTICS FOR SAFETY.
WHEN REPLACING ANY OF THESE COMPONENTS, USE ONLY THE SAME TYPE.


C.B (VJB04123)
IR LED C.B (VJB20184)
E.V.F UNIT
ONNECTOR C.B. (VJB00F19)
LED C.B. (VJB00F20)
AUTO FOCUS C.B.A (VEP00F61A)
FOCUS MOTOR
HEAD AMP C.B.A. (VEP05073B)
LUMINANCE & CHROMINANCE C.B.A. (VEP03297A)
DEW SENSOR (2)
SENSOR LED C.B. (VJB00E41)
TAKE-UP PHOTO TR C.B. (VJB00B70)
DEW SENSOR (1)
MODE SELECT SW
MECHANISM CONNECTION C.B. (VJB00F70)
MICRO SW C.B. (VJB00F03)
14P CONNECTOR
PSD C.B. (VJB 20183)
BATTERY CATCHER
REMOTE CONTROL JACK C.B. (VJB00F66)
FUSE CONNECTION C.B (VJB00G18)
OPERATION(II) C.B.A (VEP06312A)
FE HEAD C.B (VJB00F71)
M1501 LOADING MOTOR
S1502 SAFETY TAB SW
A/C HEAD C.B. (VJB00E64)
SUPPLY PHOTO TR C.B (VJB00B69)
EJECT C.B (VJB00E39)
OPERATION(III) C.B.A (VEP06314A)
OPERATION(I) C.B.A (VEP06311A)
(POWER SUPPLY SECTION)
MAIN C.B.A (VEP06336A)
(SYSTEM CONTROL SECTION)
(SERVO SECTION)
AUDIO C.B.A (VEP04131B)
CAPSTAN MOTOR
CYLINDER MOTOR
6
7
8
9
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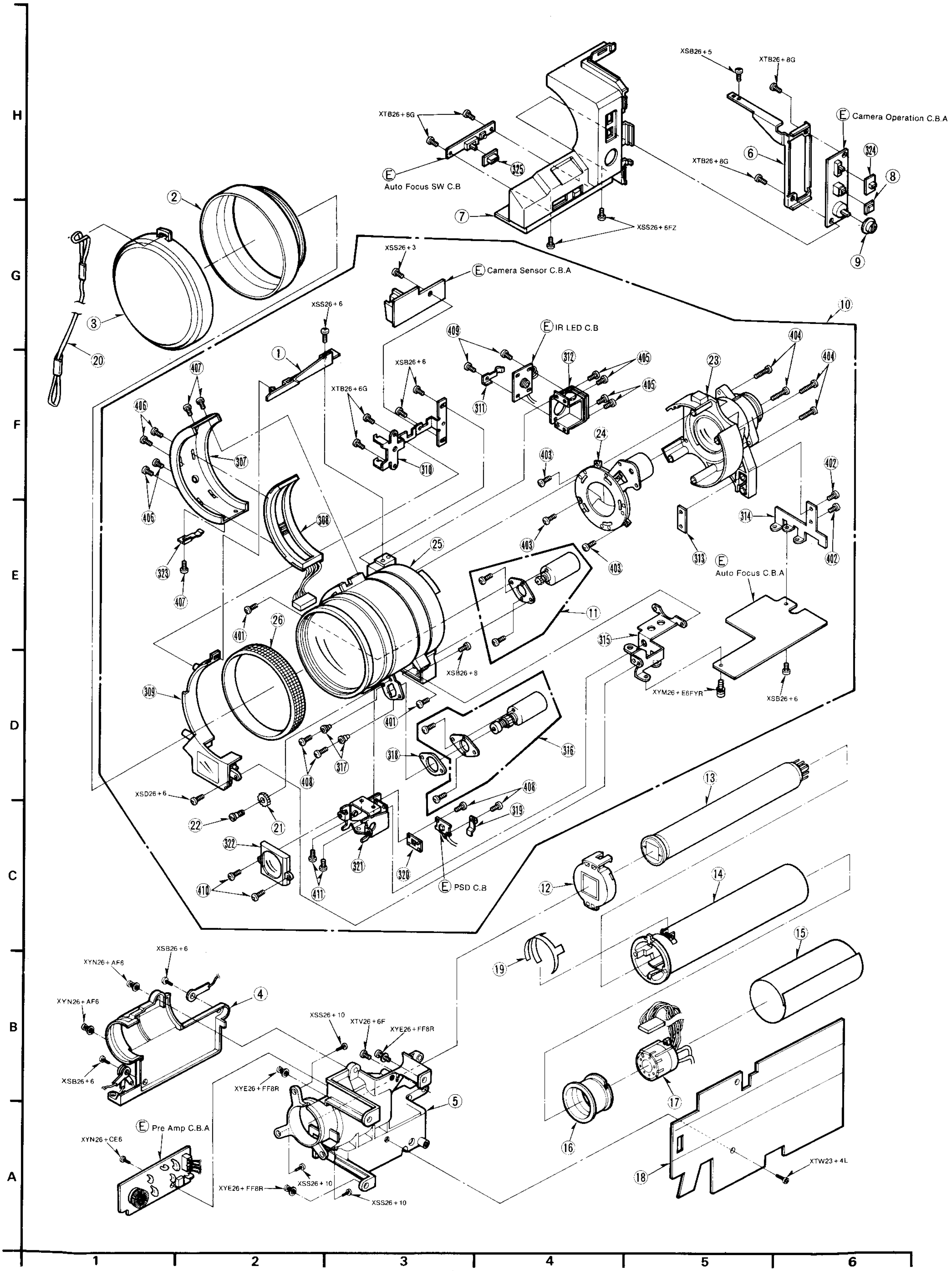
15
16
17

SECTION 4.
EXPLODED VIEWS AND PARTS LIST

4-1. EXPLODED VIEW

❶ LENS SECTION



H
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C
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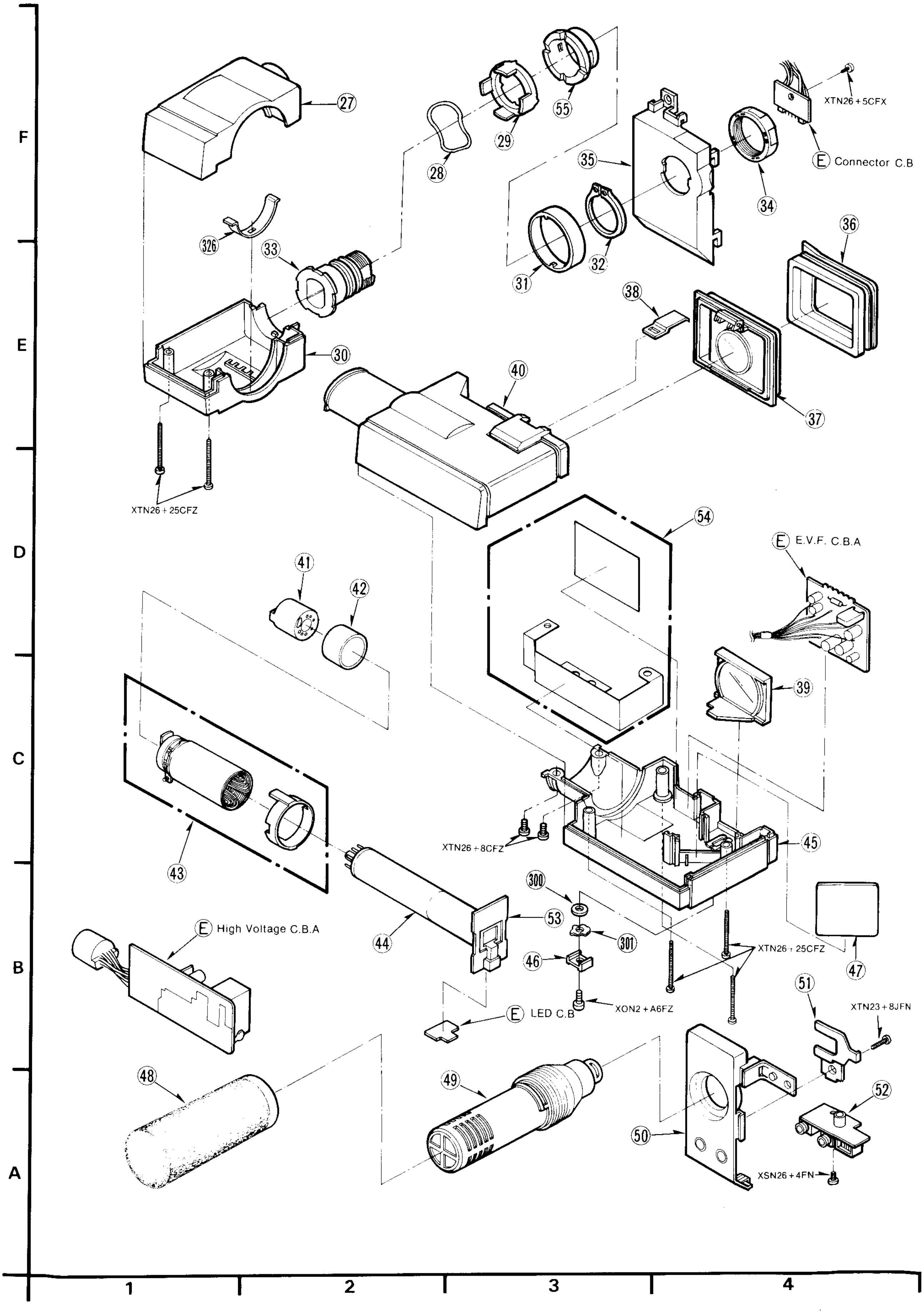
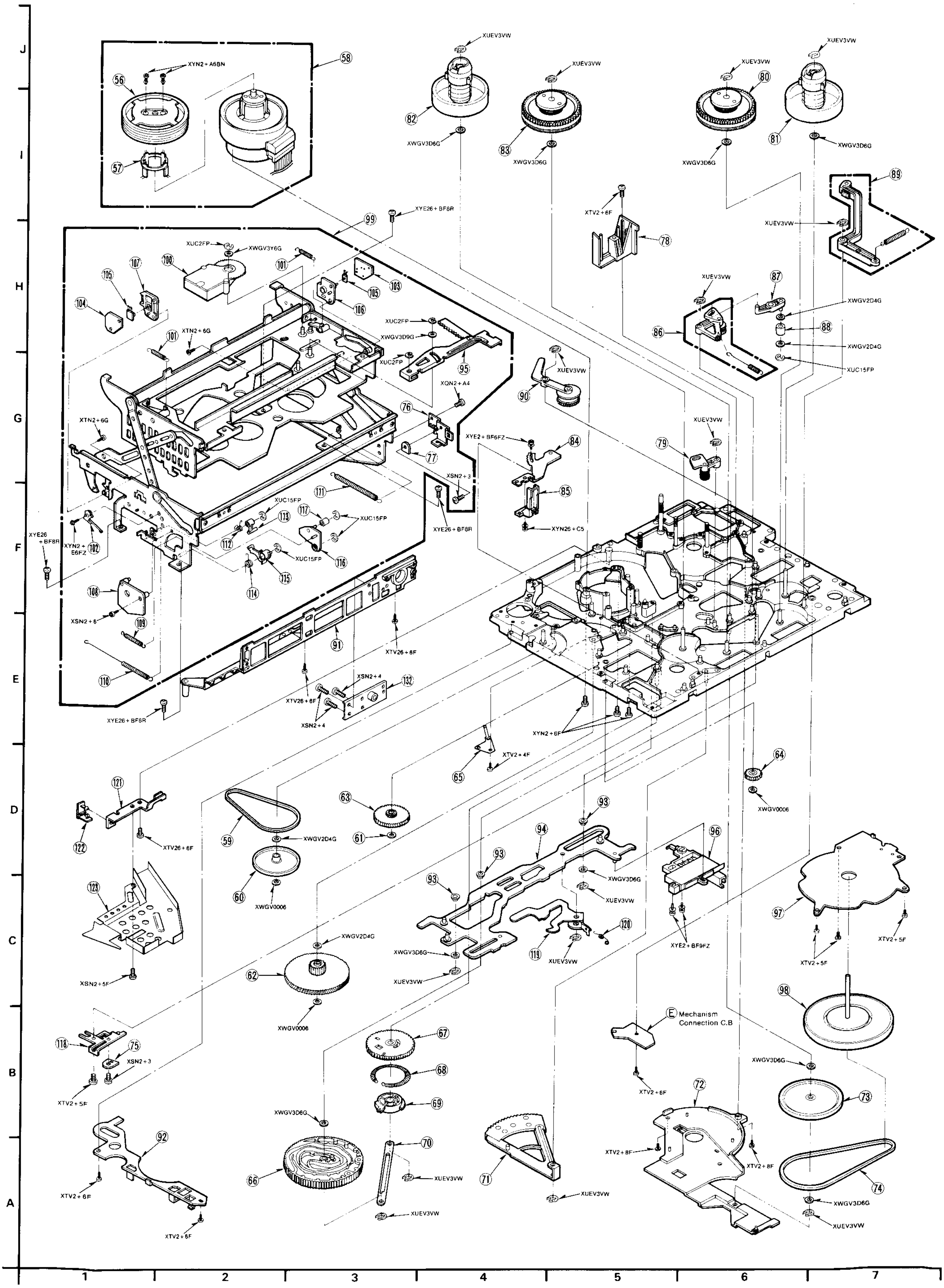
A
1
2
3
4
5
6
XSB26+5
XTB26+8G
XTB26+8G
Ⓔ Camera Operation C.B.A
⑥
XTB26+8G
㉔
⑧
⑨
Ⓔ Auto Focus SW C.B
㉕
⑦
XSS26+6FZ
②
③
⑳
XSS26+3
Ⓔ Camera Sensor C.B.A
XSS26+6
①
⑩
409
Ⓔ IR LED C.B
312
405
405
404
404
㉓
407
406
XSB26+6
XTB26+6G
311
307
310
㉔
403
406
308
403
403
402
314
402
313
Ⓔ Auto Focus C.B.A
323
407
㉕
⑪
401
㉖
315
XSB26+8
309
XYM26+E6FYR
XSB26+6
401
318
316
317
408
⑬
XSD26+6
408
319
㉒
㉑
322
321
320
Ⓔ PSD C.B
⑫
⑭
410
411
⑮
⑲
XSB26+6
XYN26+AF6
XYN26+AF6
④
XSS26+10
XTV26+6F
XYE26+FF8R
XSB26+6
XYE26+FF8R
⑤
⑰
Ⓔ Pre Amp C.B.A
XYN26+CE6
⑯
XYE26+FF8R
XSS26+10
XSS26+10
⑱
XTW23+4L

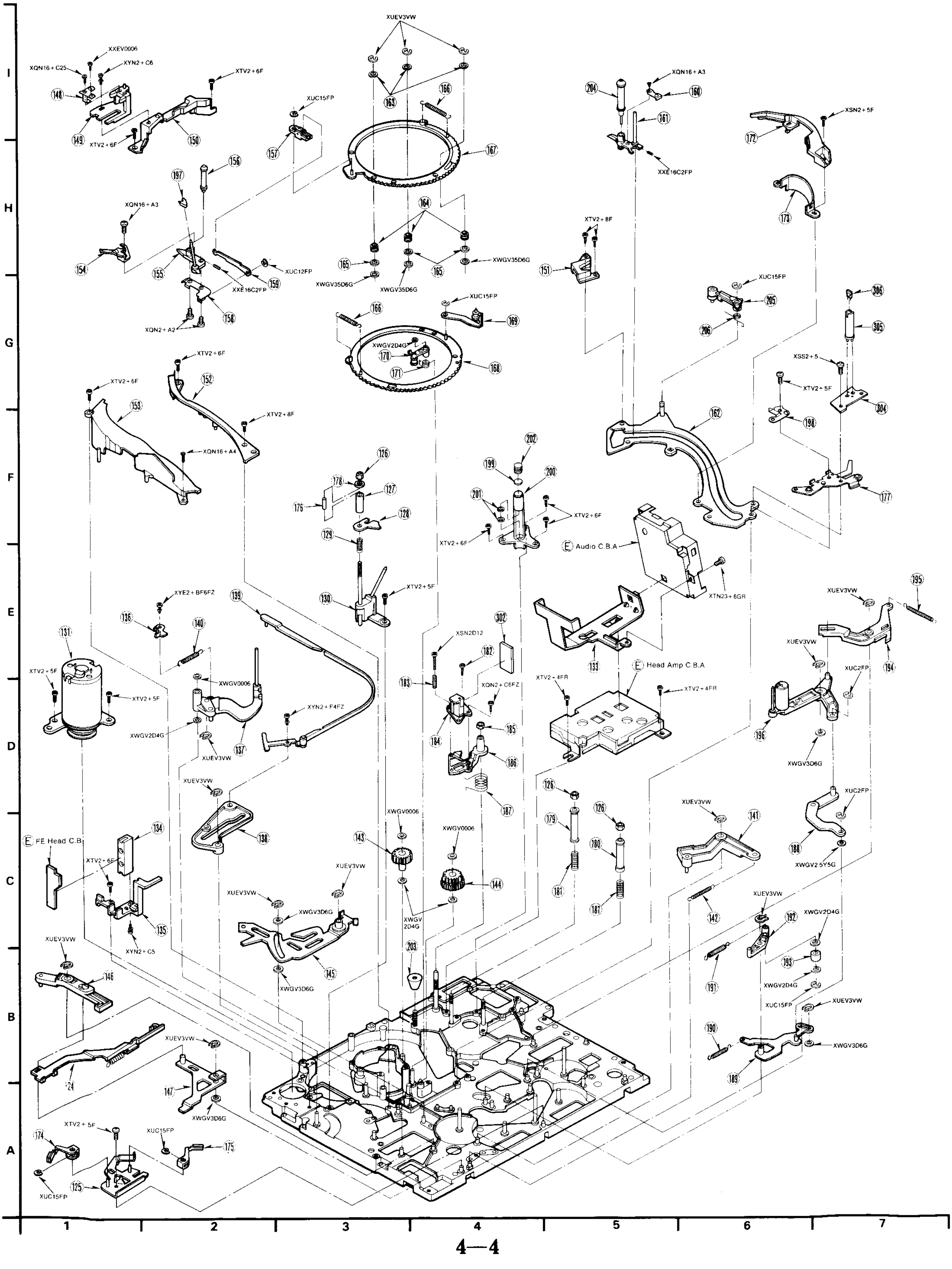
❷ ELECTRONIC VIEW FINDER (E.V.F.) & MICROPHONE SECTION


F
E
D
C
B
A
1
2
3
4
27
28
29
55
33
326
30
XTN26 + 25CFZ
31
32
35
34
XTN26 + 5CFX
Ⓔ Connector C.B
36
38
37
40
54
Ⓔ E.V.F. C.B.A
41
42
39
43
44
45
XTN26 + 8CFZ
300
301
46
53
Ⓔ High Voltage C.B.A
Ⓔ LED C.B
XON2 + A6FZ
XTN26 + 25CFZ
47
51
XTN23 + 8JFN
52
48
49
50
XSN26 + 4FN

❸ MECHANISM (1) SECTION

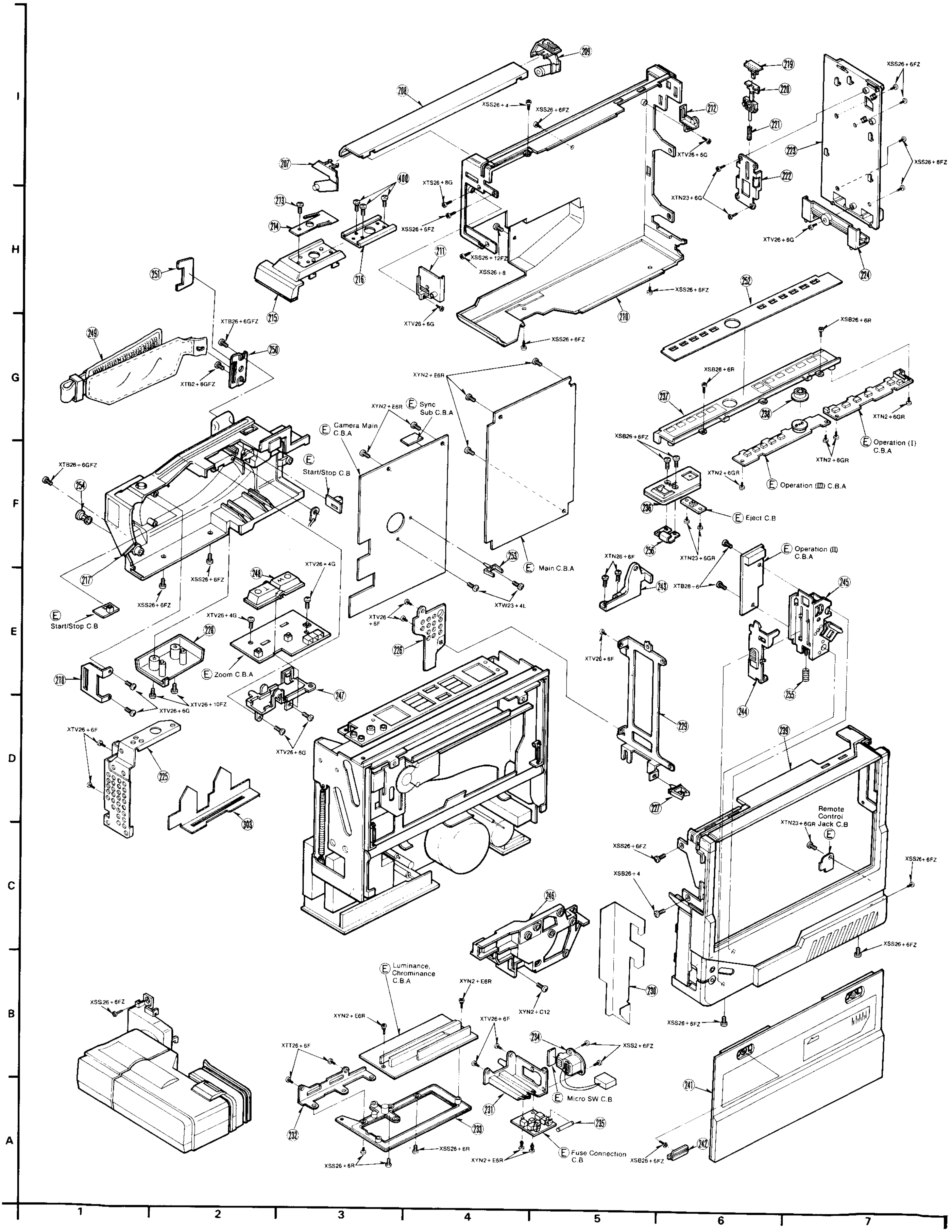

J
I
H
G
F
E
D
C
B
A
1
2
3
4
5
6
7
(58)
XYN2+A6BN
(56)
(57)
XUEV3VW
(82)
XWGV3D6G
XUEV3VW
(83)
XWGV3D6G
XUEV3VW
(80)
XWGV3D6G
XUEV3VW
(81)
XWGV3D6G
(89)
XUEV3VW
XYE26+BF8R
(99)
XUC2FP
XWGV3Y6G
(100)
(101)
(103)
(105)
(106)
(107)
(105)
(104)
XTN2+6G
(101)
XUC2FP
XWGV3D9G
XUC2FP
(95)
XTV2+6F
(78)
XUEV3VW
(87)
XWGV2D4G
(86)
(88)
XWGV2D4G
XUC15FP
XUEV3VW
(90)
XQN2+A4
(76)
(77)
XTN2+6G
XYE2+BF6FZ
(84)
XUEV3VW
(79)
XSN2+3
(85)
XYE26+BF8R
XYN26+C5
(111)
XUC15FP
(117)
XUC15FP
(113)
(112)
XUC15FP
(116)
(115)
(114)
XYE26
+BF8R
XYN2+
E6FZ
(102)
(108)
XSN2+6
(109)
(91)
XTV26+6F
(110)
XSN2+4
(132)
XTV26+6F
XSN2+4
XYE26+BF8R
XYN2+6F
(65)
XTV2+4F
(64)
XWGV0006
(121)
(122)
XTV26+6F
(59)
XWGV2D4G
(60)
XWGV0006
(63)
(61)
(93)
(94)
(93)
(93)
XWGV3D6G
XUEV3VW
(96)
(120)
(119)
XUEV3VW
XYE2+BF9FZ
(97)
XTV2+5F
XTV2+5F
(123)
XSN2+5F
XWGV2D4G
(62)
XWGV3D6G
XUEV3VW
XWGV0006
(98)
(E) Mechanism
Connection C.B
(118)
(75)
XSN2+3
XTV2+5F
(67)
(68)
(69)
XWGV3D6G
XTV2+6F
(72)
XWGV3D6G
(73)
(92)
(70)
XTV2+8F
XTV2+8F
(66)
XUEV3VW
(71)
(74)
XTV2+6F
XUEV3VW
XUEV3VW
XWGV3D6G
XUEV3VW
XTV2+6F

❹ MECHANISM (2) SECTION



I
H
G
F
E
D
C
B
A
1
2
3
4
5
6
7
XUEV3VW
XXEV0006
XQN16+C25
XYN2+C6
XTV2+6F
148
149
150
XUC15FP
157
163
166
167
204
XQN16+A3
160
161
XXE16C2FP
172
XSN2+5F
173
156
197
XQN16+A3
154
155
XXE16C2FP
XUC12FP
159
158
XQN2+A2
164
165
XWGV35D6G
151
XTV2+8F
XUC15FP
205
206
306
305
169
168
170
171
XWGV2D4G
XTV2+6F
152
153
XTV2+8F
XQN16+A4
XSS2+5
XTV2+5F
304
198
162
177
126
178
127
176
128
129
130
XTV2+5F
202
199
200
201
XTV2+6F
Ⓔ Audio C.B.A
XTN23+6GR
195
194
XUC2FP
196
XWGV3D6G
XYE2+BF6FZ
136
140
139
131
XTV2+5F
XWGV0006
XWGV2D4G
XUEV3VW
137
XYN2+F4FZ
XSN2D12
302
182
183
XQN2+C6FZ
184
185
186
187
133
Ⓔ Head Amp C.B.A
XTV2+4FR
138
134
Ⓔ FE Head C.B
135
XYN2+C5
143
144
XWGV0006
XWGV2D4G
145
XWGV3D6G
179
180
181
141
188
XUC2FP
XWGV2.5Y5G
142
192
193
191
XUC15FP
203
146
24
147
190
189
174
175
125

❺ CHASSIS & FRAME SECTION



209
208
XSS26+4
XSS26+6FZ
212
XTV26+6G
219
220
221
222
223
224
XSS26+6FZ
XTN23+6G
XTV26+6G
207
400
XTS26+8G
213
214
XSS26+6FZ
216
215
211
XSS26+12FZ
XSS26+8
XTV26+6G
210
XSS26+6FZ
251
249
XTB26+6GFZ
250
XTB2+8GFZ
252
XSB26+6R
XYN2+E6R
Sync Sub C.B.A
Camera Main C.B.A
Start/Stop C.B
237
238
XTN2+6GR
Operation (I) C.B.A
XSB26+6FZ
XTN2+6GR
Operation (III) C.B.A
236
Eject C.B
256
XTN23+6GR
XTB26+6GFZ
254
217
XSS26+6FZ
XSS26+6FZ
Start/Stop C.B
253
Main C.B.A
XTW23+4L
248
XTV26+4G
XTV26+4G
Zoom C.B.A
228
218
XTV26+10FZ
XTV26+6G
247
XTV26+6G
XTV26+6F
226
XTN26+6F
243
XTB26+6
Operation (II) C.B.A
245
244
255
XTV26+6F
229
227
XTV26+6F
225
303
239
Remote Control Jack C.B
XTN23+6GR
XSS26+6FZ
XSB26+4
XSS26+6FZ
XSS26+6FZ
246
XYN2+C12
230
XSS26+6FZ
Luminance, Chrominance C.B.A
XYN2+E6R
XYN2+E6R
XTV26+6F
XTT26+6F
234
XSS2+6FZ
231
Micro SW C.B
235
232
233
XSS26+6R
XSS26+6R
XYN2+E6R
Fuse Connection C.B
XSB26+6FZ
242
241
XSS26+6FZ
I
H
G
F
E
D
C
B
A
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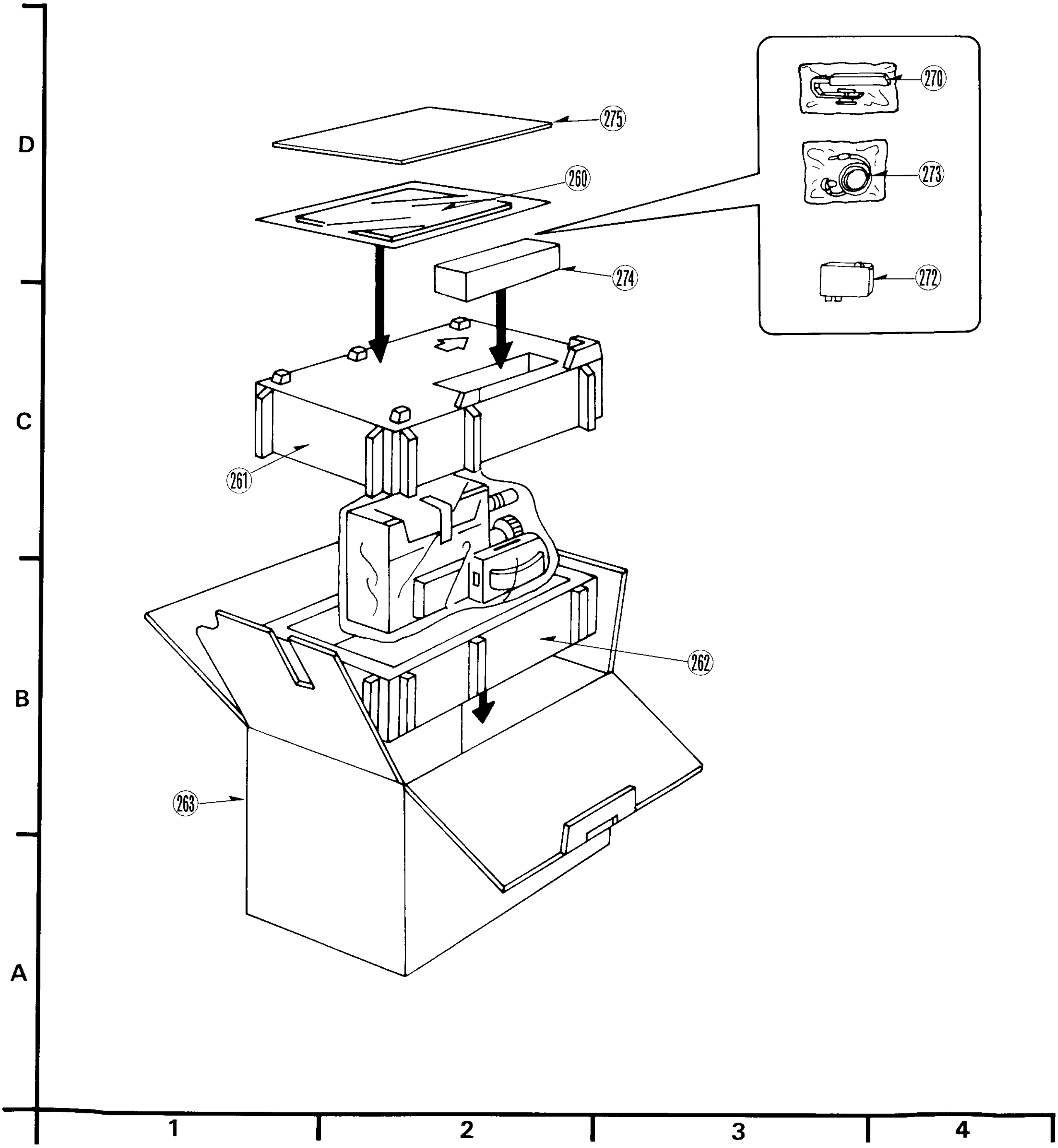
7

❻ PACKING PARTS SECTION



275
260
270
273
274
272
261
262
263
D
C
B
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4

Line Adaptor

VW-KM3E

SPECIFICATIONS

Power Source:	DC 12V
Power Consumption:	Approx. 0.4 watts
Television System:	CCIR: 625 lines, 50 fields PAL colour signal
Input Level:	Video: VIDEO IN connector (BNC) 1.0Vp-p, 75Ω terminated Audio: AUDIO IN connector (Phono jack) more than −10dB, 47kΩ
Weight:	120g
Dimensions:	100(W)×85(H)×27(D)mm

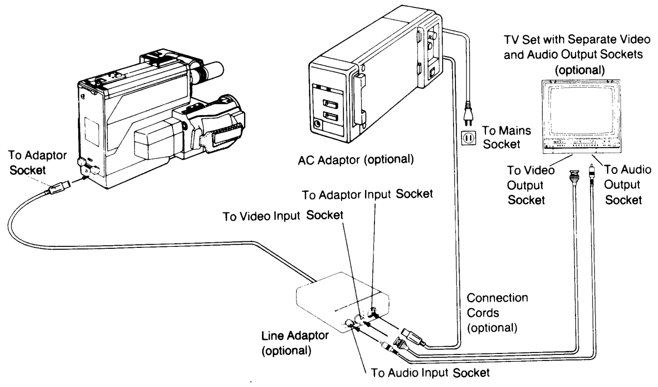
Weight and dimensions shown are approximate.
Specifications are subject to change without notice.

CONTENTS

1. CONTROLS AND COMPONENTS 1
2. CIRCUIT BOARD 1
3. SCHEMATIC DIAGRAM 1
4. EXPLODED VIEW 2

1. CONTROL AND COMPONENTS

Recording of TV Programs



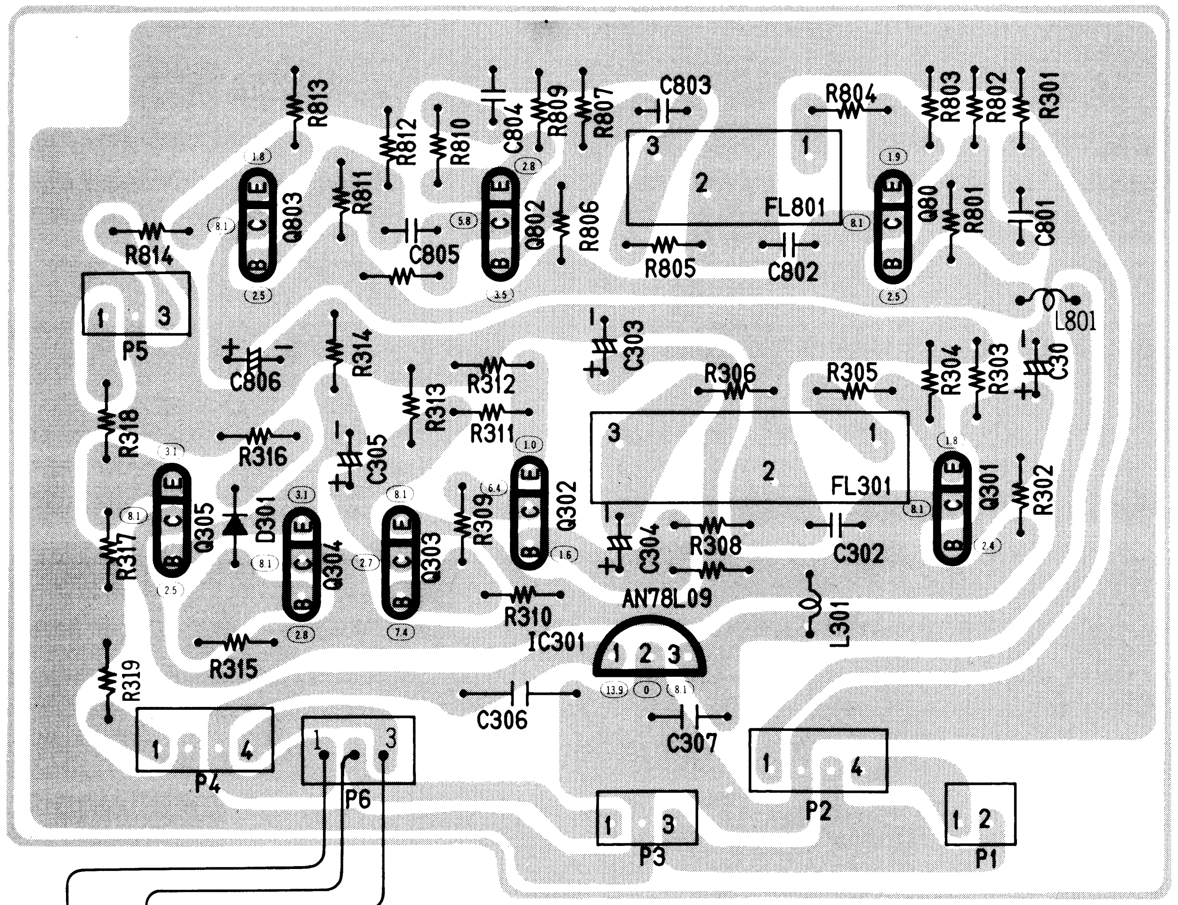
TV Set with Separate Video and Audio Output Sockets (optional)
To Mains Socket
To Adaptor Socket
AC Adaptor (optional)
To Adaptor Input Socket
To Video Input Socket
To Video Output Socket
To Audio Output Socket
Connection Cords (optional)
Line Adaptor (optional)
To Audio Input Socket

By connecting a TV set equipped with separate video and audio output jacks via the Line Adaptor (VW-KM3 optional) to the VHS Movie ,you can simultaneously record a program that is being received on the TV set.

Recording of another source instead of TV set as shown in above picture, if another source is connected, via Line Adaptor to NV-M3, recording of another source is possible.

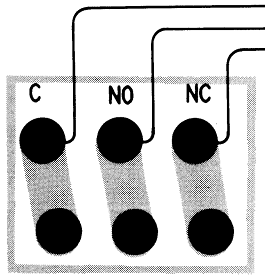
Note:
When the Line Adaptor is being used, it is not possible to record sound via an external microphone.

2. CIRCUIT BOARD



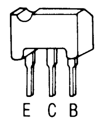
R813
R812
R810
R811
C804
R809
R807
C803
R804
R803
R802
R301
Q803
Q802
R806
FL801
Q801
R801
C801
R814
C805
R805
C802
L801
P5
C806
R314
R312
C303
R306
R305
R304
R303
C30
R318
R316
R313
R311
C305
FL301
R302
Q301
Q305
D301
Q304
Q303
R309
Q302
C304
R308
C302
R317
R310
AN78L09
IC301
L301
R315
R319
C306
C307
P4
P6
P2
P3
P1

LINE ADAPTOR CIRCUIT BOARD (VEP23041B)



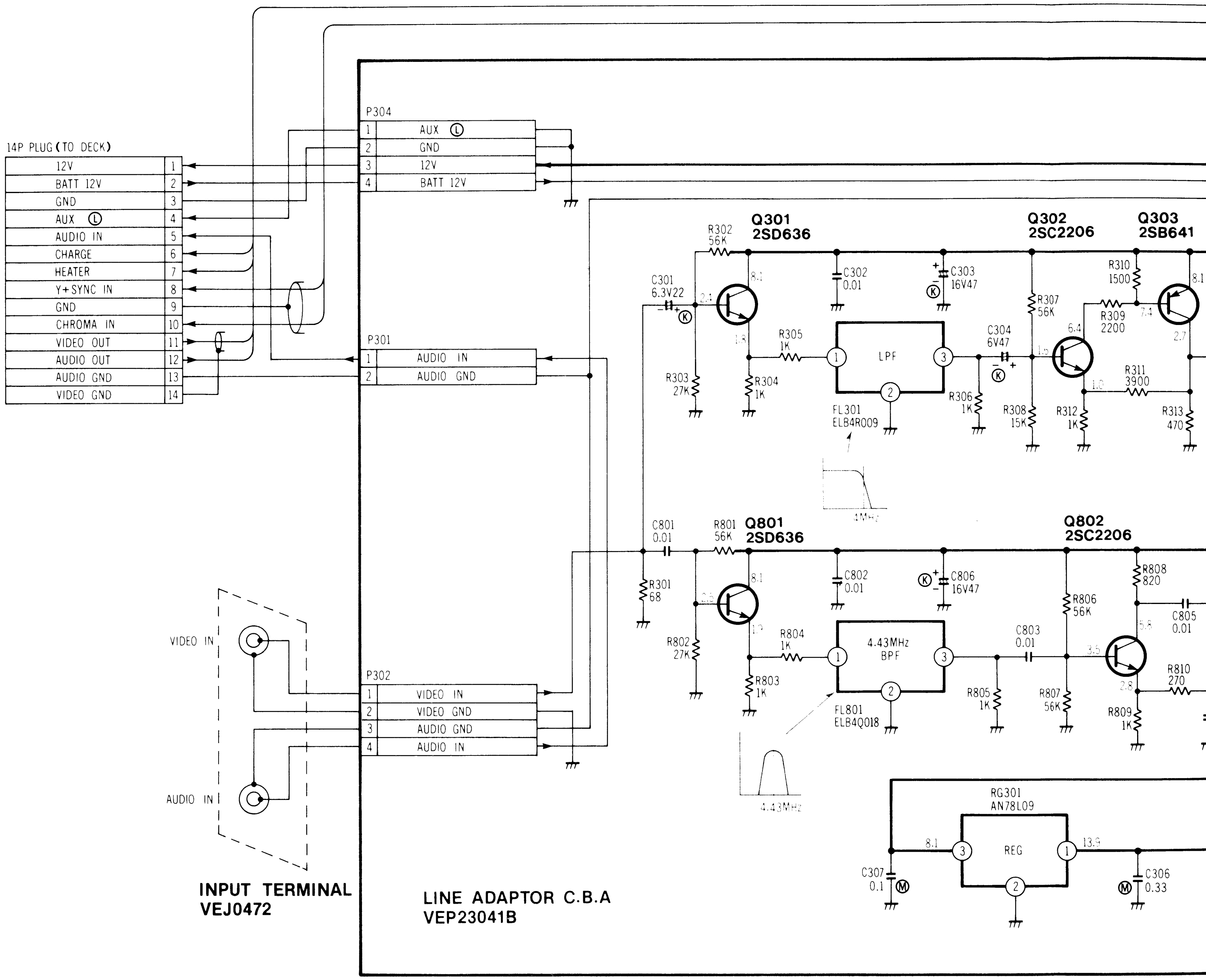
MICRO SW CIRCUIT BOARD (VJB20197)

ICs & TRANSISTORs INFORMATION



2SD636
2SC2206
2SB641

3. SCHEMATIC DIAGRAM



14P PLUG (TO DECK)
12V
BATT 12V
GND
AUX Ⓛ
AUDIO IN
CHARGE
HEATER
Y+SYNC IN
GND
CHROMA IN
VIDEO OUT
AUDIO OUT
AUDIO GND
VIDEO GND
P304
AUX Ⓛ
GND
12V
BATT 12V
P301
AUDIO IN
AUDIO GND
P302
VIDEO IN
VIDEO GND
AUDIO GND
AUDIO IN
Q301 2SD636
Q302 2SC2206
Q303 2SB641
Q801 2SD636
Q802 2SC2206
LPF
FL301 ELB4R009
4.43MHz BPF
FL801 ELB4Q018
RG301 AN78L09
REG
VIDEO IN
AUDIO IN
INPUT TERMINAL VEJ0472
LINE ADAPTOR C.B.A VEP23041B

NOTE : DO NOT USE THE PART NUMBER SHOWN ON THIS DRAWING FOR ORDERING. THE CORRECT PART NUMBER IS
IN THE PARTS LIST, AND MAY BE SLIGHTLY DIFFERENT OR AMENDED SINCE THIS DRAWING WAS PREPARED

equipped with
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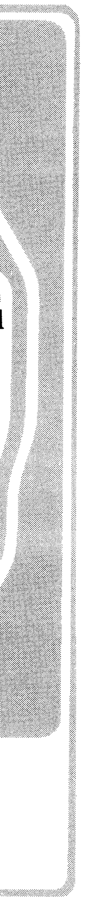
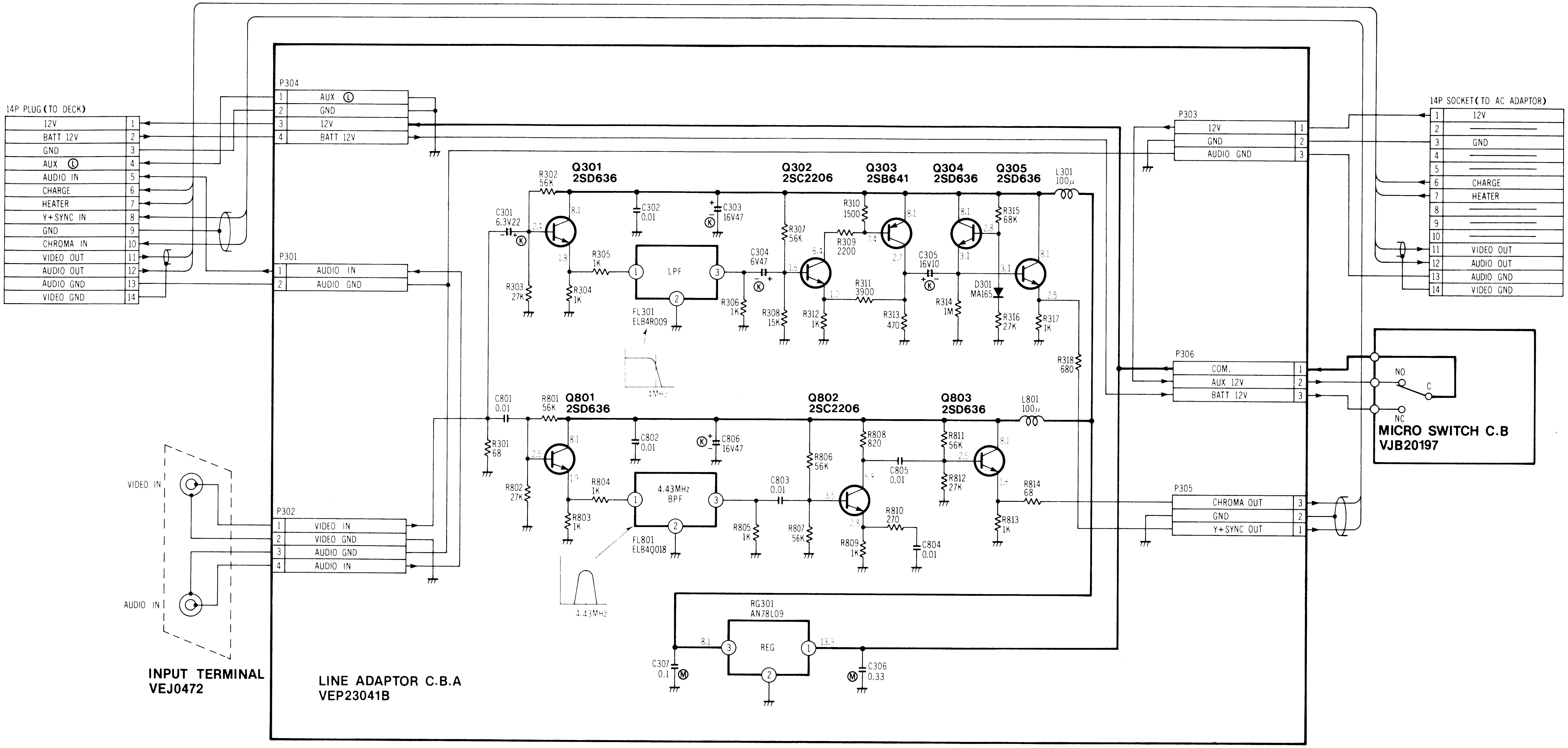
Line Adaptor
other source is

s being used,
rd sound via an



UIT

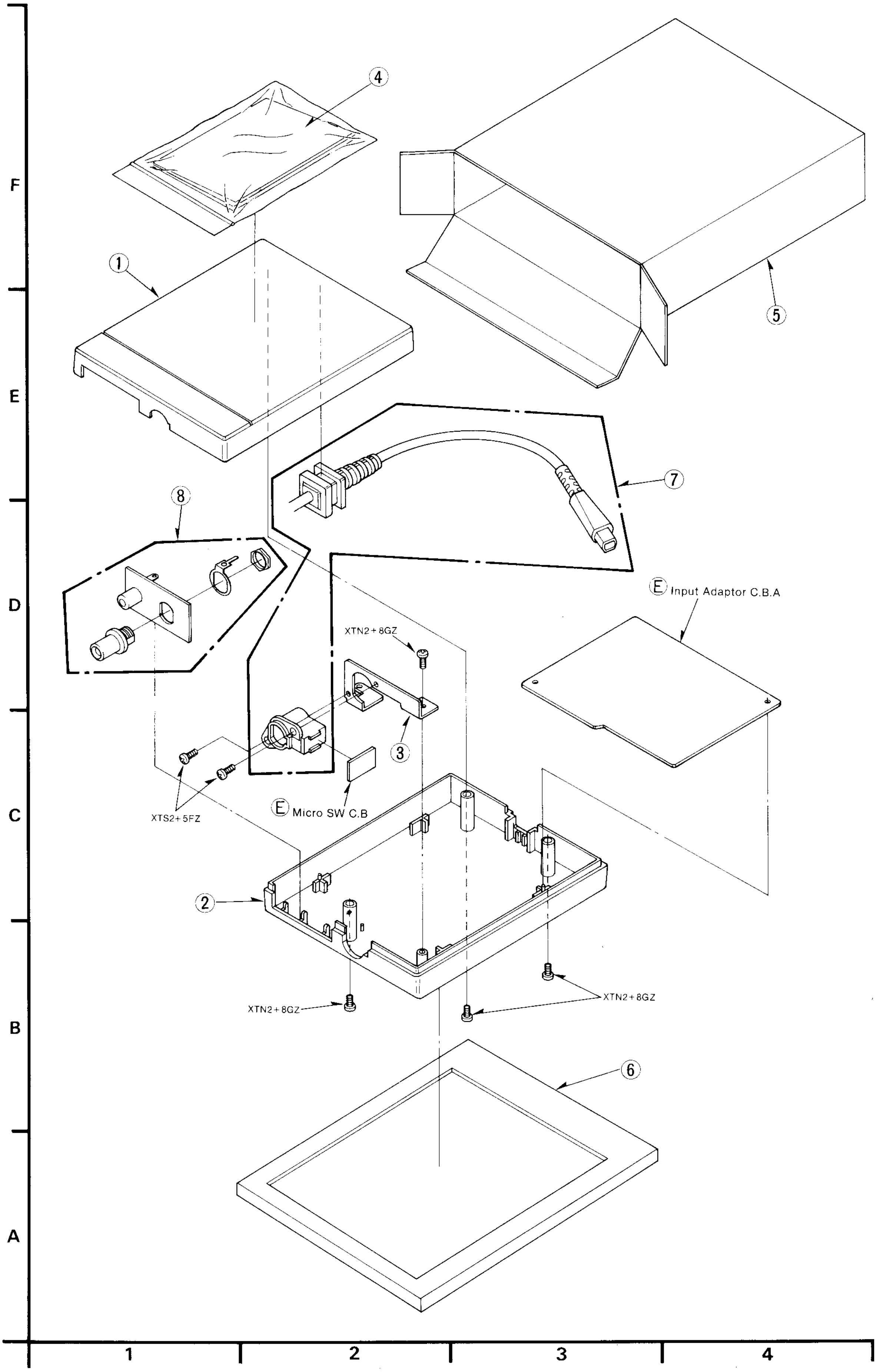
3. SCHEMATIC DIAGRAM


14P PLUG (TO DECK)
1 12V
2 BATT 12V
3 GND
4 AUX Ⓛ
5 AUDIO IN
6 CHARGE
7 HEATER
8 Y+SYNC IN
9 GND
10 CHROMA IN
11 VIDEO OUT
12 AUDIO OUT
13 AUDIO GND
14 VIDEO GND
P304
1 AUX Ⓛ
2 GND
3 12V
4 BATT 12V
P301
1 AUDIO IN
2 AUDIO GND
P302
1 VIDEO IN
2 VIDEO GND
3 AUDIO GND
4 AUDIO IN
VIDEO IN
AUDIO IN
INPUT TERMINAL
VEJ0472
LINE ADAPTOR C.B.A
VEP23041B
Q301 2SD636
Q302 2SC2206
Q303 2SB641
Q304 2SD636
Q305 2SD636
L301 100μ
R302 56K
C301 6.3V22
C302 0.01
C303 16V47
R303 27K
R304 1K
R305 1K
LPF
FL301 ELB4R009
4MHz
C304 6V47
R306 1K
R307 56K
R308 15K
R309 2200
R310 1500
R311 3900
R312 1K
R313 470
C305 16V10
R314 1M
D301 MA165
R315 68K
R316 27K
R317 1K
R318 680
Q801 2SD636
Q802 2SC2206
Q803 2SD636
L801 100μ
C801 0.01
R801 56K
R301 68
C802 0.01
C806 16V47
R802 27K
R803 1K
R804 1K
4.43MHz BPF
FL801 ELB4Q018
4.43MHz
C803 0.01
R805 1K
R806 56K
R807 56K
R808 820
R809 1K
R810 270
C804 0.01
C805 0.01
R811 56K
R812 27K
R813 1K
R814 68
RG301 AN78L09
REG
C307 0.1
C306 0.33
P303
1 12V
2 GND
3 AUDIO GND
14P SOCKET (TO AC ADAPTOR)
1 12V
3 GND
6 CHARGE
7 HEATER
11 VIDEO OUT
12 AUDIO OUT
13 AUDIO GND
14 VIDEO GND
P306
1 COM.
2 AUX 12V
3 BATT 12V
NO
C
NC
MICRO SWITCH C.B
VJB20197
P305
3 CHROMA OUT
2 GND
1 Y+SYNC OUT

NOTE: DO NOT USE THE PART NUMBER SHOWN ON THIS DRAWING FOR ORDERING. THE CORRECT PART NUMBER IS SHOWN IN THE PARTS LIST, AND MAY BE SLIGHTLY DIFFERENT OR AMENDED SINCE THIS DRAWING WAS PREPARED.

NOTE: THE MEASUREMENT MODE OF THE DC VOLTAGE ON THIS DIAGRAM IS RECORD MODE WITH PAL COLOUR SIGNAL.

4. EXPLODED VIEW


④
⑤
①
⑦
⑧
Ⓔ Input Adaptor C.B.A
XTN2+8GZ
③
Ⓔ Micro SW C.B
XTS2+5FZ
②
XTN2+8GZ
XTN2+8GZ
⑥
F
E
D
C
B
A
1
2
3
4

ORDER NO. VRD-8508-135A
(Date of issue : Sep. 1985)

NV-M3E/EG/B

PARTS LIST

MODEL NO: NV-M3E/EG/B, VW-KM3E

1. NV-M3E/EG/B Mechanical Replacement Parts List

*This parts list is detouchable from the manual.

Note:1.* Be sure to make your orders of replacement parts according to this list.
2. IMPORTANT SAFETY NOTICE
Components identified with the mark <!> have the special characteristics for safety. When replacing any of these components,use only the same type.

Ref.No.		Part No.	Part Name & Description	Pcs	Remarks
1(1)		VJF0171	Blind Piece	1	
2(1)		VDW0032	Lens Hood	1	
3(1)		VKF0608	Hood Cap	1	
4(1)		VKW0589	Coil Holder	1	
5(1)		VMK0253	Coil Shassis	1	
6(1)		VMP0764	Operation C.B.A. Support	1	
			Angle		
7(1)		VYK1064	Front Case Unit	1	
8(1)		VGU2141	AWC Set Knob	1	
9(1)		VGU2142	Iris Knob	1	
10(1)		VXP0676	AF Lens Unit	1	<!>
11(1)		VEM0233	Zoom Motor Unit	1	
12(1)		VEK2598	Filter Unit	1	
13(1)		S4161	Pick-up Tube	1	
14(1)		ELY13A401W	Pick-up Tube Yoke	1	
15(1)		VMZ0647	Pick-up Tube Shield Plate	1	
16(1)		VSQ0434	Bias Light Unit	1	
17(1)		VEK2343	Pick-up Tube Socket Unit	1	
18(1)		VSC1481	Shield Plate	1	
19(1)		VMC0114	Yoke Earth Plate	1	
20(1)		VGQ0911	Strap	1	
21(1)		VDG0238	Idler Gear	1	
22(1)		VMS2891	Idler Gear Shaft	1	
23(1)		VDB0786	Master Flange Unit	1	
24(1)		VXL1361	Iris Unit	1	
25(1)		VXP0679	Lens Unit (A)	1	
26(1)		VGQ0857	Focus Rubber Cover	1	
27(1)		VKM0624	Top Holder	1	
28(1)		VMX0955	Wave Washer	1	
29(1)		VJF0326	Stopper	1	
30(2)		VKM0625	Bottom Holder	1	
31(1)		VMX0954	Tight Ring	1	
32(1)		VMX0956	Stopper Ring	1	
33(1)		VMS2980	Fixture Shaft	1	
34(1)		VMX0852	Fixture Ring	1	
35(2)		VYP1508	Front Panel Unit	1	
36(2)		VMG0345	Eye Cap	1	
37(2)		VYQ0012	Lens (B) Unit	1	<!>
38(2)		VMC0157	Lens Spring	1	
39(2)		VYK1153	Lens (A) Unit	1	<!>
40(2)		VKM0622	Top Case	1	
41(2)		VEK2452	CRT Socket Unit	1	
42(2)		VMG0339	CRT Fixing Rubber	1	
43(2)		VEK2481	Deflection Yoke Unit	1	
44(2)		M01JGU9WB	CRT	1	<!>
45(2)		VYK1154	Bottom Case Unit	1	
46(2)		VGD0892	Lens (A) Support Knob	1	
47(2)		VDL0045	Mirror	1	
48(2)		VYF0658	Wind Screen	1	
49(2)		VSV0010	Microphone	1	
50(2)		VMA6713	Mic Plate	1	
51(2)		VMA6708	Mic Angle	1	
52-1(2)		VJB04123	Circuit Board	1	
52-2(2)		VJJ0098	MIC/EAR Jack	1	
52-3(2)		VJP1245	Connector	1	
52-4(2)		ECEA0JK221	Capacitor 6.3V 220	1	
52-5(2)		ERDS2TJ221	Resistor 220	1	
52-6(2)		MA4705	Diode	1	
53(2)		VMA6693	CRT Masking	1	
54(2)		VXA2470	Insulator Unit	1	
55(2)		VJF0327	Shaft Holder	1	
56(3)		VEH0292	Upper Cylinder Unit	1	
57(3)		VJR0140	RT Terminal	1	
58(3)		VEG0406	Cylinder Unit	1	
59(3)		VDV0154	Loading Belt	1	
60(3)		VDG0204	Intermediate Pulley Gear	1	
61(3)		VMX0653	Cut washer	1	
62(3)		VDG0205	Drive Gear (A)	1	
63(3)		VDG0206	Drive Gear (B)	1	
64(3)		VDG0207	Drive Gear (C)	1	
65(3)		VXS0064	Earth Holder Unit	1	
66(3)		VDG0202	Cam Gear	1	
67(3)		VDG0211	Loading Gear (C) (2)	1	
68(3)		VMB1324	Loading Gear (C) Spring	1	
69(3)		VDG0210	Loading Gear (C) (1)	1	
70(3)		VMA6551	SG Limiter	1	
71(3)		VXP0632	Sector Gear Unit	1	
72(3)		VMD0698	Belt Cover	1	
73(3)		VDP0992	Main Pulley	1	
74(3)		VDV0155	Capstan Belt	1	
75(3)		VEK2372	Dew Sensor (1) Unit	1	
76(3)		VMA6757	Dew Sensor (2) Angle	1	
77(3)		VEK2361	Dew Sensor (2) Unit	1	
78(3)		VGQ0888	Cassette Opener	1	
79(3)		VXL1256	REW Arm (A) Unit	1	
80(3)		VXP0648	Take-up Clutch Unit	1	
81(3)		VXR0129	Take-up Reel Table	1	
82(3)		VXR0128	Supply Reel Table	1	
83(3)		VXP0647	Supply Clutch Unit	1	
84(3)		VMA6560	Safety Tab Switch Base	1	
85(3)		VSH0023	Safety Tab Switch	1	
86(3)		VXL1254	FF Arm (A) Unit	1	
87(3)		VXL1267	FF Arm (B) (1) Unit	1	
88(3)		VDP0993	REW Arm Kick Roller	1	
89(3)		VXZ0197	Soft Brake (T) Unit	1	
90(3)		VXP0637	Drive Gear Unit	1	
91(3)		VMD0716	Operation Frame	1	
92(3)		VMD0697	Gear Cover	1	
93(3)		VMX0388	Thrust Washer	3	
94(3)		VXL1261	Main Rod Unit	1	
95(3)		VXL1404	Dumper Gear Lever Unit	1	
96(3)		VSS0125	Mode Select Switch Unit	1	
97(3)		VEK2348	Capstan Stator Unit	1	<!>
98(3)		VXP0634	Capstan Rotor Unit	1	
99(3)		VXA2413	Cassette Up Unit	1	
100(3)		VDG0214	Dumper Unit	1	
101(3)		VMB1328	Pressing Spring	2	
102(3)		VSH0026	Leaf Switch	1	
103(3)		VJB00B70	Take-up Photo Tr. C.B.	1	
104(3)		VJB00B69	Supply Photo Tr.C.B.	1	
105(3)		PN158NV	Photo Tr.	2	
106(3)		VMD0606	Photo Holder (R)	1	
107(3)		VMD0607	Photo Holder (L)	1	
108(3)		VMD0710	Leaf Switch Cover	1	
109(3)		VMB1330	Board Spring	1	
110(3)		VMB1329	Holder (L) Spring	1	
111(3)		VMB1392	Holder (R) Spring	1	
112(3)		VMB1226	Lock Lever Spring (B)	1	
113(3)		VML1650	Lock Lever (B)	1	
114(3)		VMB1331	Lock Lever Spring (A)	1	
115(3)		VML1649	Lock Lever (A)	1	
116(3)		VXA2288	Lock Board Unit	1	
117(3)		VDP1000	Lock Roller	1	
118(3)		VMA6769	Dew Sensor (1) Angle	1	
119(3)		VML1707	Drive Arm Kick Lever	1	
120(3)		VMB1388	Drive Arm Kick Lever	1	
			Spring		
121(3)		VMP0710	Hinge Angle	1	
122(3)		VKC0210	Hinge	1	
123(3)		VXA2434	Shield Unit	1	
124(4)		VXA2393	Supporter Unit	1	
125(4)		VXA2392	Brake Plate (1) Unit	1	
126(4)		VHN0047	M2 Nylon Nut	3	

Ref.No.		Part No.	Part Name & Description	Pcs	Remarks
127(4)		VDP1033	P1 Roller	1	
128(4)		VMA6547	P1 Limiter Plate	1	
129(4)		VMB1327	P1 Post Spring	1	
130(4)		VXA2215	P1 Base (1) Unit	1	
131(4)		VEM0240	Loading Motor Unit	1	<!>
132(3)		VXA2350	Frame (1) Angle Unit	1	
133(4)		VKC0248	Audio Support Angle	1	
134(4)		VBS0021	FE Head	1	
135(4)		VMD0694	FE Head Base	1	
136(4)		VMD0707	Tension Adjust Piece	1	
137(4)		VXL1262	Tension Arm Unit	1	
138(4)		VML1641	Band Release Arm	1	
139(4)		VXZ0199	Tension Band Unit	1	
140(4)		VMB1315	Tension Spring	1	
141(4)		VXL1264	Soft Brake Lever (S) Unit	1	
142(4)		VMB1314	Soft Brake Lever Spring	1	
143(4)		VDG0208	Loading (A) Gear	1	
144(4)		VDG0209	Loading (B) Gear	1	
145(4)		VXL1251	Tension Kick Lever Unit	1	
146(4)		VXL1275	Eject Lever (A) Unit	1	
147(4)		VXL1276	Eject Lever (B) Unit	1	
148(4)		VMA6542	P2 Adjust Plate	1	
149(4)		VMD0701	Supply Post Stopper	1	
150(4)		VMD0699	V Stopper Base	1	
151(4)		VMD0700	Take-up Post Stopper	1	
152(4)		VMD0721	Loading Guide S1	1	
153(4)		VMD0722	Loading Guide S2	1	
154(4)		VMD0769	Tape Protector	1	
155(4)		VXA2221	Supply Shaft Holder (1)	1	
			Unit		
156(4)		VZJ0036C	Roller Post (S) Unit	1	
157(4)		VXA2231	Connection Tie Unit	1	
158(4)		VXA2256	Supply Shaft Holder	1	
			Angle Unit		
159(4)		VMM0144	Connection Rod	1	
160(4)		VMA6546	Take-up Shaft Holder Angle	1	
161(4)		VXA2360	T Shaft Holder Unit	1	
162(4)		VXA2257	Loading Guide T Unit	1	
163(4)		VMX0784	Ring Guide Sleeve Unit	3	
164(4)		VDP0996	Ring Guide Roller	3	
165(4)		VMS2692	Ring Guide Sleeve (L)	3	
166(4)		VMB1319	Loading Spring	2	
167(4)		VXA2253	Loading Ring S (1) Unit	1	
168(4)		VXA2223	Loading Ring T (1) Unit	1	
169(4)		VXA2232	Loading Rink T Unit	1	
170(4)		VXL1270	Ring Pressure Arm (1) Unit	1	
171(4)		VMB1323	Ring Pressure Arm Spring	1	
172(4)		VMD0713	Tape Cover (A)	1	
173(4)		VMA6552	Chassis Shield Panel	1	
174(4)		VXZ0206	Brake (L) Unit	1	
175(4)		VXZ0207	Brake (R) Unit	1	
176(4)		VMX0876	P1 Collar	1	
177(4)		VMA6694	LED Angle	1	
178(4)		VMS2888	Post Sleeve (B)	1	
179(4)		VMS2693	P4 Post Sleeve	1	
180(4)		VMS2694	P5 Post Sleeve	1	
181(4)		VMB1322	P4/P5 Spring	2	
182(4)		VHD0144	A/C Head Adjust Screw	1	
183(4)		VMB1321	A/C Head Adjust Spring	1	
184(4)		VBR0087	A/C Head	1	
185(4)		VHN0023	M3 Nylon Nut	1	
186(4)		VML1637	A/C Head Arm	1	
187(4)		VMB1320	A/C Height Spring	1	
188(4)		VXL1265	Pinch Roller Pressure	1	
			Arm Unit		
189(4)		VXL1249	Pinch Roller pressure	1	
			Arm (C) Unit		
190(4)		VMB1326	Pinch Roller Spring	1	
			Pressure		
191(4)		VMB1318	REW Arm Spring	1	
192(4)		VXL1269	REW Arm Base (1) Unit	1	
193(4)		VDP0993	REW Arm Kick Roller	1	
194(4)		VML1640	Pinch Lever	1	
195(4)		VMB1325	Pinch Lever Spring	1	
196(4)		VXL1329	Pressure Roller Lever (1)	1	
			Unit		
197(4)		VGQ0842	F2 Cap	1	
198(4)		VMA6695	LED Angle (B)	1	
199(4)		VXD0098	Thrust Bearing	1	
200(4)		VXD0093	Capstan Housing Unit	1	
201(4)		VMX0775	Dust Seal	1	
202(4)		VHD0204	Adjust Screw	2	
203(4)		VHN0039	Adjust Nut	1	
204(4)		VXJ0036A	Roller Post (T) Unit	1	
205(4)		VXL1327	Pressure Lever Unit	1	
206(4)		VMB1393	Pressure Lever Spring	1	
207(5)		VKC0237	Door Hinge (L)	1	
208(5)		VKF0607	Operation Door	1	
209(5)		VKC0236	Door Hinge (R)	1	
210(5)		VYK1116	Bottom Case Unit	1	
211(5)		VKC0211	Door Support Piece (L)	1	
212(5)		VKC0202	Door Support Piece (R)	1	
213(5)		VHD0184	Shoe Screw	1	
214(5)		VMC0116	Shoe Spring	1	
215(5)		VGQ0862	Shoe Support Piece	1	
216(5)		VMA6562	Shoe	1	
217(5)		VYH0071	Grip Case (1) Unit	1	
218(5)		VMP0788	Belt Angle	1	
219(5)		VGU2127	Battery Stopper Knob	1	
220(5)		VGQ0802	Battery Stopper	1	
221(5)		VMB1359	Battery Stopper Spring	1	
222(5)		VMA6601	Battery Stopper Support	1	
			Angle		
223(5)		VKF0577	Battery Support Plate	1	
224(5)		VJF0267	Battery Catcher	1	
225(5)		VMP0554	E.V.F. Support Angle	1	
226(5)		VMA6678	Gear Cover	1	
227(5)		VJF0285	Clamp	1	
228(5)		VKF0614	Grip Separate Piece	1	
229(5)		VMP0675	Battery Angle	1	
230(5)		VMZ0735	Barrier (B)	1	
231(5)		VMD0717	Multi Connector Frame	1	
232(5)		VMP0595	Board Support Angle (A)	1	
233(5)		VXK0731	Frame (3) Unit	1	
234(5)		VEK2562	Multi Connector Unit	1	
235(5)		XBA2C20TB0	Fuse 2.0A/250V	1	<!>
236(5)		VXU0543	Eject Button Unit	1	
237(5)		VXU0437	Operation Board Unit	1	
238(5)		VGU2430	Tracking Knob	1	
239(5)		VYK1191	Top Case Unit	1	
241(5)		VGP1281	Cassette Cover	1	
242(5)		VMG0332	Cassette Cover Cap	2	
243(5)		VMP0792	Belt Holder	1	
244(5)		VGU2524	Power Button	1	
245(5)		VXU0580	Power/Stand-by Button Angle	1	
246(5)		VMD0714	Tape Cover (B)	1	
247(5)		VGQ0864	Zoom Switch Holder	1	
248(5)		VGU2367	Zoom Switch Cover	1	
249(5)		VYC0120	Grip Belt Unit	1	
250(5)		VGQ0787	Grip Belt Hook	1	
251(5)		VGF0166	Hook Cover	1	
252(5)		VGH0768	Operation Plate	1	
253(5)		VJF0290	Clamp	1	
254(5)		VKF0613	Adjust Cap	1	
255(5)		VMB1359	Power Botton Spring	1	
256(5)		VMP0793	Handle Fixture Angle	1	
260(6)		VQF1610	Fan Bag Kit	1	NV-M3EG
260(6)		VQF1611	Fan Bag Kit	1	NV-M3E
260(6)		VQF1612	Fan Bag Kit	1	NV-M3B
261(6)		VPN1314	Cushion (Top)	1	
262(6)		VPN1315	Cushion (Buttom)	1	
263(6)		VPG2387	Packing Case	1	NV-M3EG
263(6)		VPG2388	Packing Case	1	NV-M3E
263(6)		VPG2389	Packing Case	1	NV-M3B
270(6)		VYH0053	Handle Unit	1	
272(6)		VSQ0443	AV Connector	1	
273(6)		VBE0005	Earphone	1	
274(6)		VPK0524	Accessory Case	1	
275(6)		VPN1249	Top Pad	1	
300(2)		VMX0941	Washer	1	

Ref.No.		Part No.	Part Name & Description	Pcs	Remarks
301(2)		VMX0942	Wave Washer	1	
302(4)		VJB00E64	A/C Head C.B.	1	
303(5)		VMZ0690	Barrier (C)	1	
304(4)		VJB00E41	Sensor LED C.B.	1	
305(4)		VMD0465	LED Holder	1	
306(4)		LN59NV	Sensor LED	1	
307(1)		VDW0028	Encoder Cover	1	
308(1)		VEK2534	Sliding Unit	1	
309(1)		VGQ0859	AF Lens Cover	1	
310(1)		VMP0762	Lens Angle (1)	1	
311(1)		VJF0312	LED Lead Wire Holder	1	
312(1)		VXA2401	LED Adjust Unit	1	
313(1)		VMP0761	Nut Plate	1	
314(1)		VMP0757	C.B Support Angle	1	
315(1)		VMP0763	Lens Angle (2)	1	
316(1)		VEM0238	Focus Motor	1	
317(1)		VMX0884	Motor Spacer	2	
318(1)		VMX0815	Motor Spacer	1	
319(1)		VJF0313	PSD Lead Wire Holder	1	
320(1)		VJF0305	PSD Holder	1	
321(1)		VXA2400	Sensor Adjust Unit	1	
322(1)		VXP0677	Sensor Lens Unit	1	
323(1)		VJF0316	Encoder Lead Wire Holder	1	
324(1)		VGU2497	AWT SET Switch	1	
325(1)		VGU2494	AF/MF SW Knob	1	
326(2)		VMC0156	Brake Spring	1	
			Screws		
400(5)		VHD0213		3	
401(1)		VHD0230		2	
402(1)		VHD0233		2	
403(1)		VHD0234		3	
404(1)		VHD0235		4	
405(1)		VHD0238		4	
406(1)		VHD0239		4	
407(1)		VHD0240		3	
408(1)		VHD0241		4	
409(1)		VHD0243		2	
410(1)		VHD0244		2	
411(1)		VHD0246		2	
			JIG		
		VFK0302	9Pin Connection Cable	1	
		VFK0303	Camera Holder	1	
		VFK0304	Y/C Separator	1	
		VFK0312	10Pin Connection Cable	1	
		VFK0305	Hex. Wrench (0.71mm)	1	
		VFJ8125H3F	VHS Alignment Tape	1	
		VFK0144	Retaining Ring Remover	1	
			3(mm)		
		VFK0191	Post Adjustment Plate	1	
		VFK0190	Reel Table Height Jig	1	
		VFK0189	H-Position Adj-Fixture	1	
		VFK0137	Post Adjustment	1	
			Screwdriver		
		VFK0157	Fine Adjustment	1	
			Screwdriver		
		VFK0133	Dial Torque Gauge	1	
		VFK0134	Adaptor for VFK0133	1	
		VFK0180	(plastic clamper only)	1	
		VFK66	Fan Type Tension Gauge	1	
		VFK27	Head cleaning stick	1	
		MOR265	Morlytone Grease	1	
		VFK0283	Service Alignment Tool Kit	1	

2. NV-M3E/EG/B Electrical Replacement Parts List

Note:1.* Be sure to make your orders of replacement parts according to this list.
2.IMPORTANT SAFETY NOTICE
Components identified with the mark <!> have the special characteristics for safety. When replacing any of these components,use only the same type.
3.Unless otherwise specified,
All resistors are in OHMS ,K=1,000 OHMS. All capacitors are in MICRO-FARADS(uf),P=uuF.
4.The P.C.Board units marked width'■'show below the main assembled parts.

Ref.No.		Part No.	Part Name & Description	Pcs	Remarks
		VEP25007A	PRE AMP C.B.A.	1	
		VEP23042A	CAMERA MAIN C.B.A.	1	<!>
		VEP23043A	SUNC SUB C.B.A.	1	
		VEP20187A	CAMERA SENSOR C.B.A.	1	
		VEP26041A	CAMERA OPERATION C.B.A.	1	
		VEP20188A	ZOOM C.B.A.	1	
		VEP00F17C	E.V.F. C.B.A.	1	
		VEP00F18C	HIGH VOLTAGE C.B.A.	1	
		VJB00F19	CONNECTOR C.B.	1	
		VJB00F20	LED C.B.	1	
		VEP00F61A	AUTO FOCUS C.B.A.	1	
		VJB26044	AUTO FOCUS SW C.B.	1	
		VJB20184	IR LED C.B.	1	
		VJB20183	PSD C.B.	1	
		VEP06336A	MAIN C.B.A.	1	
			(POWER, SERVO, SYSTEM		
			CONTROL)		
		VEP03297A	LUMINANCE/CHROMINANCE	1	
			C.B.A.		
		VEP05073B	HEAD AMP C.B.A.	1	
		VEP04131B	AUDIO C.B.A.	1	
		VEP06311A	OPERATION (I) C.B.A.	1	
		VEP06312A	OPERATION (II) C.B.A.	1	
		VEP06314A	OPERATION (III) C.B.A.	1	
		VJB00F03	MICRO SW C.B.	1	
		VJB00E39	EJECT C.B.	1	
		VJB00G18	FUSE CONNECTION C.B.	1	
		VJB26042	START/STOP C.B.	1	
		VJB00F70	MECHANISM CONNECTION C.B.	1	
		VJB00F71	FE HEAD C.B.	1	
		VJB00F66	REMOTE CONTROL JACK C.B.	1	
		VSC1570	SHIELD CASE	1	(FOR AUDIO)
		VSC1571	SHIELD CASE	1	(FOR AUDIO)
		VKC0248	SHIELD CASE HING	1	(FOR AUDIO)
		VSC1354	SHIELD CASE	1	(FOR HEAD AMP)
		VSC1355	SHIELD CASE	1	(FOR HEAD AMP)
		VSC1538	SHIELD PLATE	1	(FOR HEAD AMP)
		VSC1569	SHIELD PLATE	1	(FOR HEAD AMP)
		VMZ0664	BARRIER	1	(FOR HEAD AMP)
		VMZ0736	SHIELD CASE BARRIER	1	(FOR HEAD AMP)
	■	VEP25007A	PRE AMP C.B.A.		
			TRANSISTORS		
Q101		2SD601		1	(Q)
Q102		2SA1022		1	(C)
Q103		2SC2404		1	(C)
Q104		2SA1022		1	(C)
Q105		2SK316		1	(P)
			DIODES		
D101		MA151K		1	
D102		MA151K		1	
			RESISTORS		
R101		ERJ6GCYJ224	CHIP 220K	1	
R102		ERJ6GCYJ102	CHIP 1K	1	
R103		ERJ6GCYJ122	CHIP 1.2K	1	
R104		ERJ6GCYJ221	CHIP 220	1	
R105		ERJ6GCYJ104	CHIP 100K	1	
R106		ERJ6GCYJ822	CHIP 8.2K	1	
R107		ERJ6GCYJ124	CHIP 120K	1	
R108		ERJ6GCYJ273	CHIP 27K	1	
R109		ERJ6GCYJ151	CHIP 150	1	
R110		ERJ6GCYJ102	CHIP 1K	1	
R111		ERJ6GCYJ152	CHIP 1.5K	1	
R112		ERJ6GCYJ562	CHIP 5.6K	1	
R113		ERJ6GCYJ101	CHIP 100	1	
R114		ERJ6GCYJ471	CHIP 470	1	
R115		ER050CKG2704	2.7M	1	
R116		ERJ6GCYK565	CHIP 56M	1	
			CAPACITORS		
C101		ECUX1H473ZFN	CERAMIC 50V 0.04	1	
C102		ECSF1CE476	TANTALUM 16V 47	1	
C103		ECRJA050M11	TRIMER 50P	1	
C105		ECUX1H010DN	CERAMIC 50V 1P	1	
C106		ECSF0JE475	TANTALUM 6.3V 4.7	1	
C107		ECSF1AE335	TANTALUM 10V 3.3	1	
C108		ECSF1AE335	TANTALUM 10V 3.3	1	
C109		ECSF0JE475	TANTALUM 6.3V 4.7	1	
C110		ECSF0JE476	TANTALUM 6.3V 4.7	1	
C111		ECUX1H473ZFN	CERAMIC 50V 0.04	1	
			COILS		
L101		VLQ0163K330	33uH	1	
L102		VLQ0164	360uH	1	

Ref.No.		Part No.	Part Name & Description	Pcs	Remarks
	■	VEP23042A	CAMERA MAIN C.B.A.		
			INTEGRATED CIRCUITS		
IC201		NJM3414M		1	
IC202		AN2110S		1	
IC301		AN2310S		1	
IC302		AN2320S		1	
IC303		AN2360S		1	
IC304		AN2210S		1	
IC401		AN2431		1	
IC402		MN8037S		1	
IC403		AN6552S		1	
IC601		NJM4556MB		1	
IC602		NJM4558M		1	
IC901		uPD7507G613		1	
IC902		AN6912S		1	
			TRANSISTORS		
Q301		2SD601		1	
Q302		2SB709		1	
Q303		2SC2404		1	
Q304		2SD601		1	
Q305		2SD601		1	
Q306		2SD601		1	
Q307		2SD601		1	
Q308		2SD601		1	
Q309		2SD601		1	
Q310		2SA1022		1	
Q311		2SD601		1	
Q312		2SD601		1	
Q313		2SD601		1	
Q314		2SD601		1	
Q315		2SB709		1	
Q401		2SC2404		1	
Q402		2SC2404		1	
Q403		2SD601		1	
Q404		2SC2404		1	
Q405		2SC2404		1	
Q406		2SD601		1	
Q407		2SD601		1	
Q408		2SD601		1	
Q409		2SD601		1	
Q410		2SD601		1	
Q411		2SD601		1	
Q412		2SD601		1	
Q413		2SD601		1	
Q414		2SD601		1	
Q415		2SD601		1	
Q601		2SB819		1	
Q602		2SD601		1	
Q603		2SD601		1	
Q604		2SD601		1	
Q605		2SD1051		1	
Q606		2SD601		1	
Q607		2SD601		1	
Q608		2SD601		1	
Q609		2SD601		1	
Q610		2SC1567A		1	OR 2SC1567
Q611		2SD1051		1	
Q612		2SD601		1	
Q613		2SB819		1	
Q614		2SD601		1	
Q615		2SC1567A		1	
Q616		2SD601A		1	
Q617		2SB709		1	
Q618		2SB970		1	
Q619		2SD1051		1	
Q620		2SB709		1	
Q621		2SD814		1	
Q622		2SD601		1	
Q623		2SB792		1	
Q624		2SD814		1	

Ref.No.		Part No.	Part Name & Description	Pcs	Remarks
Q625		2SB709		1	
Q626		2SD601A		1	
Q628		2SD601		1	
Q629		2SD601		1	
Q630		2SB709		1	
Q631		2SD601		1	
Q633		2SD601A		1	
Q901		2SD601		1	
Q902		2SB970		1	
			DIODES		
D201		MA151K		1	
D301		MA151K		1	
D302		OA90		1	
D303		MA700		1	
D401		MA151WA		1	
D402		MA151K		1	
D403		MA345B		1	
D404		MA345B		1	
D601		MA151K		1	
D602		MA3075		1	
D603		MA151K		1	
D604		10E2		1	
D605		MA152K		1	
D606		MA162A		1	
D607		MA151K		1	
D608		MA151K		1	
D901		MA151K		1	
			RESISTORS		
R200		ERJ6GCYJ683	CHIP 68K	1	
R201		ERJ6GCYJ222	CHIP 2.2K	1	
R202		ERJ6GCYJ103	CHIP 10K	1	
R203		ERJ6GCYJ273	CHIP 27K	1	
R204		ERJ6GCYJ103	CHIP 10K	1	
R206		ERJ6GCYJ154	CHIP 150K	1	
R207		ERJ6GCYJ333	CHIP 33K	1	
R208		ERJ6GCYJ273	CHIP 27K	1	
R209		ERJ6GCYJ333	CHIP 33K	1	
R210		ERJ6GCYJ393	CHIP 39K	1	
R212		ERJ6GCYJ103	CHIP 10K	1	
R213		ERJ6GCYJ105	CHIP 1M	1	
R214		ERJ6GCYJ333	CHIP 33K	1	
R215		ERJ6GCYJ183	CHIP 18K	1	
R216		ERJ6GCYJ102	CHIP 1K	1	
R217		ERJ6GCYJ563	CHIP 56K	1	
R218		ERJ6GCYJ102	CHIP 1K	1	
R219		ERJ6GCYJ331	CHIP 330	1	
R220		ERJ6GCYJ331	CHIP 330	1	
R221		ERJ6GCYJ102	CHIP 1K	1	
R222		ERJ6GCYJ102	CHIP 1K	1	
R223		ERJ6GCYJ102	CHIP 1K	1	
R224		ERJ6GCYJ331	CHIP 330	1	
R225		ERJ6GCYJ562	CHIP 5.6K	1	
R226		ERJ6GCYJ821	CHIP 820	1	
R227		ERJ6GCYJ102	CHIP 1K	1	
R228		ERJ6GCYJ273	CHIP 27K	1	
R229		ERJ6GCYJ102	CHIP 1K	1	
R230		ERJ6GCYJ683	CHIP 68K	1	
R241		ERJ6GCYJ102	CHIP 1K	1	
R242		ERJ6GCYJ102	CHIP 1K	1	
R300		ERJ6GCYJ101	CHIP 100	1	
R301		ERJ6GCYJ103	CHIP 10K	1	
R302		ERJ6GCYJ102	CHIP 1K	1	
R303		ERJ6GCYJ102	CHIP 1K	1	
R304		ERJ6GCYJ822	CHIP 8.2K	1	
R305		ERJ6GCYJ561	CHIP 560	1	
R306		ERJ6GCYJ331	CHIP 330	1	
R307		ERJ6GCYJ223	CHIP 22K	1	
R308		ERJ6GCYJ333	CHIP 33K	1	
R309		ERJ6GCYJ223	CHIP 22K	1	

Ref.No.		Part No.	Part Name & Description	Pcs	Remarks
R310		ERJ6GCYJ471	CHIP 470	1	
R311		ERJ6GCYJ223	CHIP 22K	1	
R312		ERJ6GCYJ332	CHIP 3.3K	1	
R313		ERJ6GCYJ333	CHIP 33K	1	
R314		ERJ6GCYJ102	CHIP 1K	1	
R315		ERJ6GCYJ223	CHIP 22K	1	
R316		ERJ6GCYJ103	CHIP 10K	1	
R317		ERJ6GCYJ333	CHIP 33K	1	
R318		ERJ6GCYJ333	CHIP 33K	1	
R319		ERJ6GCYJ333	CHIP 33K	1	
R320		ERJ6GCYJ333	CHIP 33K	1	
R321		ERJ6GCYJ104	CHIP 100K	1	
R322		ERJ6GCYJ333	CHIP 33K	1	
R323		ERJ6GCYJ223	CHIP 22K	1	
R324		ERJ6GCYJ223	CHIP 22K	1	
R325		ERJ6GCYJ223	CHIP 22K	1	
R326		ERJ6GCYJ103	CHIP 10K	1	
R327		ERJ6GCYJ332	CHIP 3.3K	1	
R328		ERJ6GCYJ393	CHIP 39K	1	
R329		ERJ6GCYJ333	CHIP 33K	1	
R330		ERJ6GCYJ333	CHIP 33K	1	
R331		ERJ6GCYJ333	CHIP 33K	1	
R332		ERJ6GCYJ333	CHIP 33K	1	
R333		ERJ6GCYJ472	CHIP 4.7K	1	
R334		ERJ6GCYJ333	CHIP 33K	1	
R335		ERJ6GCYJ682	CHIP 6.8K	1	
R336		ERJ6GCYJ823	CHIP 82K	1	
R337		ERJ6GCYJ332	CHIP 3.3K	1	
R338		ERJ6GCYJ103	CHIP 10K	1	
R339		ERJ6GCYJ332	CHIP 3.3K	1	
R340		ERJ6GCYJ682	CHIP 6.8K	1	
R341		ERJ6GCYJ223	CHIP 22K	1	
R342		ERJ6GCYJ152	CHIP 1.5K	1	
R343		ERJ6GCYJ103	CHIP 10K	1	
R344		ERJ6GCYJ332	CHIP 3.3K	1	
R345		ERJ6GCYJ332	CHIP 3.3K	1	
R346		ERJ6GCYJ122	CHIP 1.2K	1	
R347		ERJ6GCYG333	CHIP 33K	1	
R348		ERJ6GCYJ103	CHIP 10K	1	
R349		ERJ6GCYJ332	CHIP 3.3K	1	
R350		ERJ6GCYJ332	CHIP 3.3K	1	
R351		ERJ6GCYJ332	CHIP 3.3K	1	
R352		ERJ6GCYJ332	CHIP 3.3K	1	
R353		ERJ6GCYJ333	CHIP 33K	1	
R354		ERJ6GCYJ332	CHIP 3.3K	1	
R355		ERJ6GCYJ103	CHIP 10K	1	
R356		ERJ6GCYJ223	CHIP 22K	1	
R357		ERJ6GCYJ102	CHIP 1K	1	
R358		ERJ6GCYJ332	CHIP 3.3K	1	
R359		ERJ6GCYJ102	CHIP 1K	1	
R360		ERJ6GCYJ332	CHIP 3.3K	1	
R361		ERJ6GCYJ332	CHIP 3.3K	1	
R362		ERJ6GCYJ333	CHIP 33K	1	
R363		ERJ6GCYJ682	CHIP 6.8K	1	
R364		ERJ6GCYJ153	CHIP 15K	1	
R365		ERJ6GCYJ152	CHIP 1.5K	1	
R366		ERJ6GCYJ103	CHIP 10K	1	
R367		ERJ6GCYJ102	CHIP 1K	1	
R368		ERJ6GCYJ332	CHIP 3.3K	1	
R369		ERJ6GCYJ563	CHIP 56K	1	
R370		ERJ6GCYJ102	CHIP 1K	1	
R371		ERJ6GCYJ681	CHIP 680	1	
R372		ERJ6GCYJ561	CHIP 560	1	
R373		ERJ6GCYJ102	CHIP 1K	1	
R374		ERJ6GCYG561	CHIP 560	1	
R375		ERJ6GCYG133	CHIP 13K	1	
R376		ERJ6GCYJ102	CHIP 1K	1	
R377		ERJ6GCYJ563	CHIP 56K	1	
R378		ERJ6GCYJ823	CHIP 82K	1	
R381		ERJ6GCYG563	CHIP 56K	1	
R382		ERJ6GCYJ220	CHIP 22	1	
R383		ERJ6GCYJ103	CHIP 10K	1	
R386		ERJ6GCYJ274	CHIP 270K	1	
R387		ERJ6GCYJ224	CHIP 220K	1	
R401		ERJ6GCYJ331	CHIP 330	1	
R402		ERJ6GCYJ681	CHIP 680	1	
R403		ERJ6GCYJ222	CHIP 2.2K	1	
R404		ERJ6GCYJ391	CHIP 390	1	
R405		ERJ6GCYJ432	CHIP 4.3K	1	
R406		ERJ6GCYJ102	CHIP 1K	1	
R407		ERJ6GCYJ222	CHIP 2.2K	1	
R408		ERJ6GCYJ821	CHIP 820	1	
R410		ERJ6GCYJ471	CHIP 470	1	
R411		ERJ6GCYJ222	CHIP 2.2K	1	
R412		ERJ6GCYJ153	CHIP 15K	1	
R413		ERJ6GCYG472	CHIP 4.7K	1	
R414		ERJ6GCYG183	CHIP 18K	1	
R415		ERJ6GCYJ223	CHIP 22K	1	
R416		ERJ6GCYJ223	CHIP 22K	1	
R419		ERJ6GCYJ472	CHIP 4.7K	1	
R420		ERJ6GCYJ103	CHIP 10K	1	
R421		ERJ6GCYJ332	CHIP 3.3K	1	
R422		ERJ6GCYJ103	CHIP 10K	1	
R423		ERJ6GCYJ822	CHIP 8.2K	1	
R424		ERJ6GCYJ103	CHIP 10K	1	
R425		ERJ6GCYJ123	CHIP 12K	1	
R426		ERJ6GCYJ102	CHIP 1K	1	
R427		ERJ6GCYJ332	CHIP 3.3K	1	
R428		ERJ6GCYJ333	CHIP 33K	1	
R429		ERJ6GCYJ273	CHIP 27K	1	
R430		ERJ6GCYJ183	CHIP 18K	1	
R431		ERJ6GCYJ562	CHIP 5.6K	1	
R432		ERJ6GCYJ102	CHIP 1K	1	
R433		ERJ6GCYJ103	CHIP 10K	1	
R434		ERJ6GCYJ102	CHIP 1K	1	
R435		ERJ6GCYJ103	CHIP 10K	1	
R436		ERJ6GCYJ272	CHIP 2.7K	1	
R437		ERJ6GCYJ122	CHIP 1.2K	1	
R438		ERJ6GCYJ333	CHIP 33K	1	
R439		ERJ6GCYJ102	CHIP 1K	1	
R440		ERJ6GCYJ103	CHIP 10K	1	
R442		ERJ6GCYJ222	CHIP 2.2K	1	
R443		ERJ6GCYJ333	CHIP 33K	1	
R444		ERJ6GCYJ272	CHIP 2.7K	1	
R445		ERJ6GCYJ103	CHIP 10K	1	
R446		ERJ6GCYJ122	CHIP 1.2K	1	
R447		ERJ6GCYJ333	CHIP 33K	1	
R448		ERJ6GCYJ333	CHIP 33K	1	
R449		ERJ6GCYJ333	CHIP 33K	1	
R450		ERJ6GCYJ333	CHIP 33K	1	
R451		ERJ6GCYJ223	CHIP 22K	1	
R452		ERJ6GCYJ562	CHIP 5.6K	1	
R453		ERJ6GCYJ332	CHIP 3.3K	1	
R454		ERJ6GCYJ332	CHIP 3.3K	1	
R455		ERJ6GCYJ332	CHIP 3.3K	1	
R456		ERJ6GCYJ332	CHIP 3.3K	1	
R458		ERJ6GCYJ331	CHIP 330	1	
R459		ERJ6GCYJ331	CHIP 330	1	
R460		ERJ6GCYJ103	CHIP 10K	1	
R461		ERJ6GCYJ472	CHIP 4.7K	1	
R462		ERJ6GCYJ472	CHIP 4.7K	1	
R463		ERJ6GCYJ103	CHIP 10K	1	
R464		ERJ6GCYJ103	CHIP 10K	1	
R465		ERJ6GCYJ122	CHIP 1.2K	1	
R466		ERJ6GCYJ102	CHIP 1K	1	
R467		ERJ6GCYJ152	CHIP 1.5K	1	
R468		ERJ6GCYJ123	CHIP 12K	1	
R469		ERJ6GCYJ273	CHIP 27K	1	
R470		ERJ6GCYJ123	CHIP 12K	1	
R471		ERJ6GCYJ473	CHIP 47K	1	
R472		ERJ6GCYJ562	CHIP 5.6K	1	
R473		ERJ6GCYJ104	CHIP 100K	1	
R601		ERJ6GCYJ221	CHIP 220	1	
R602		ERJ6GCYJ564	CHIP 560K	1	
R603		ERJ6GCYJ103	CHIP 10K	1	
R604		ERJ6GCYJ103	CHIP 10K	1	
R605		ERJ6GCYJ103	CHIP 10K	1	
R606		ERJ6GCYG563	CHIP 56K	1	
R607		ERJ6GCYG473	CHIP 47K	1	
R608		ERJ6GCYJ682	CHIP 6.8K	1	

Ref.No.		Part No.	Part Name & Description	Pcs	Remarks
R609		ERJ6GCYJ222	CHIP 2.2K	1	
R610		ERJ6GCYJ101	CHIP 100	1	
R611		ERJ6GCYJ220	CHIP 22	1	
R612		ERJ6GCYJ104	CHIP 100K	1	
R613		ERJ6GCYJ274	CHIP 270K	1	
R614		ERJ6GCYJ103	CHIP 10K	1	
R615		ERJ6GCYJ105	CHIP 1M	1	
R616		ERJ6GCYJ333	CHIP 33K	1	
R617		ERJ6GCYJ222	CHIP 2.2K	1	
R618		ERJ6GCYJ562	CHIP 5.6K	1	
R620		ERJ6GCYJ154	CHIP 150K	1	
R621		ERJ6GCYK106	CHIP 10M	1	
R622		ERJ6GCYJ102	CHIP 1K	1	
R623		ERJ6GCYJ563	CHIP 56K	1	
R624		ERJ6GCYJ471	CHIP 470	1	
R625		ERJ6GCYJ220	CHIP 22	1	
R626		ERJ6GCYJ270	CHIP 27	1	
R627		ERJ6GCYJ273	CHIP 27K	1	
R628		ERJ6GCYJ334	CHIP 330K	1	
R629		ERJ6GCYJ123	CHIP 12K	1	
R630		ERJ6GCYG823	CHIP 82K	1	
R631		ERJ6GCYG223	CHIP 22K	1	
R632		ERJ6GCYJ123	CHIP 12K	1	
R633		ERJ6GCYJ273	CHIP 27K	1	
R634		ERJ6GCYJ333	CHIP 33K	1	
R635		ERJ6GCYJ104	CHIP 100K	1	
R636		ERJ6GCYJ333	CHIP 33K	1	
R637		ERJ6GCYJ103	CHIP 10K	1	
R638		ERJ6GCYJ221	CHIP 220	1	
R639		ERJ6GCYJ223	CHIP 22K	1	
R640		ERJ6GCYJ122	CHIP 1.2K	1	
R641		ERJ6GCYJ102	CHIP 1K	1	
R642		ERJ6GCYJ564	CHIP 560K	1	
R643		ERJ6GCYJ154	CHIP 150K	1	
R644		ERJ6GCYJ824	CHIP 820K	1	
R646		VREO021		1	
R647		ERJ6GCYJ560	CHIP 56	1	
R648		ERJ6GCYJ102	CHIP 1K	1	
R649		ERJ6GCYK106	CHIP 10M	1	
R650		ERJ6GCYK106	CHIP 10M	1	
R651		ERJ6GCYK106	CHIP 10M	1	
R652		ERJ6GCYJ120	CHIP 12	1	
R653		ERJ6GCYJ120	CHIP 12	1	
R654		ERJ6GCYJ681	CHIP 680	1	
R655		ERJ6GCYG272	CHIP 2.7K	1	
R656		ERJ6GCYG472	CHIP 4.7K	1	
R657		ERJ6GCYJ394	CHIP 390K	1	
R658		ERJ6GCYJ683	CHIP 68K	1	
R659		ERJ6GCYJ564	CHIP 560K	1	
R660		ERJ6GCYJ684	CHIP 680K	1	
R661		ERJ6GCYJ223	CHIP 22K	1	
R662		ERJ6GCYJ223	CHIP 22K	1	
R663		ERJ6GCYJ103	CHIP 10K	1	
R664		ERJ6GCYJ102	CHIP 1K	1	
R665		ERJ6GCYJ103	CHIP 10K	1	
R666		ERJ6GCYJ103	CHIP 10K	1	
R667		ERJ6GCYJ122	CHIP 1.2K	1	
R668		ERJ6GCYJ103	CHIP 10K	1	
R669		ERJ6GCYJ102	CHIP 1K	1	
R670		ERJ6GCYJ105	CHIP 1M	1	
R671		ERJ6GCYJ392	CHIP 3.9K	1	
R672		ERJ6GCYJ103	CHIP 10K	1	
R673		ERJ6GCYJ100	CHIP 10	1	
R674		ERJ6GCYJ333	CHIP 33K	1	
R676		ERJ6GCYJ332	CHIP 3.3K	1	
R677		ERJ6GCYJ560	CHIP 56	1	
R678		ERJ6GCYJ102	CHIP 1K	1	
R679		ERJ6GCYJ183	CHIP 18K	1	
R680		ERJ6GCYJ103	CHIP 10K	1	
R681		ERJ6GCYJ103	CHIP 10K	1	
R682		ERJ6GCYJ333	CHIP 33K	1	
R683		ERJ6GCYJ182	CHIP 1.8K	1	
R684		ERJ6GCYJ103	CHIP 10K	1	
R685		ERJ6GCYJ124	CHIP 120K	1	
R686		ERJ6GCYJ332	CHIP 3.3K	1	

Ref.No.		Part No.	Part Name & Description	Pcs	Remarks
R687		ERJ6GCYJ473	CHIP 47K	1	
R688		ERJ6GCYJ102	CHIP 1K	1	
R689		ERJ6GCYJ102	CHIP 1K	1	
R690		ERJ6GCYJ103	CHIP 10K	1	
R691		ERJ6GCYJ333	CHIP 33K	1	
R692		ERJ6GCYJ102	CHIP 1K	1	
R694		ERJ6GCYJ272	CHIP 2.7K	1	
R695		ERJ6GCYJ181	CHIP 180	1	
R696		ERJ6GCYJ152	CHIP 1.5K	1	
R697		ERJ6GCYJ151	CHIP 150	1	
R698		ERJ6GCYJ822	CHIP 8.2K	1	
R901		ERJ6GCYJ563	CHIP 56K	1	
R902		ERJ6GCYJ102	CHIP 1K	1	
R903		ERJ6GCYJ563	CHIP 56K	1	
R904		ERJ6GCYJ563	CHIP 56K	1	
R905		ERJ6GCYJ152	CHIP 1.5K	1	
R906		ERJ6GCYJ154	CHIP 150K	1	
R907		ERJ6GCYJ563	CHIP 56K	1	
R908		ERJ6GCYJ563	CHIP 56K	1	
R909		ERJ6GCYJ272	CHIP 2.7K	1	
R910		ERJ6GCYJ221	CHIP 220	1	
R911		ERJ6GCYJ563	CHIP 56K	1	
R912		ERJ6GCYJ563	CHIP 56K	1	
R913		ERJ6GCYJ105	CHIP 1M	1	
R914		ERJ6GCYJ105	CHIP 1M	1	
R915		ERJ6GCYJ473	CHIP 47K	1	
R916		ERJ6GCYJ473	CHIP 47K	1	
R917		ERJ6GCYJ104	CHIP 100K	1	
R918		ERJ6GCYJ104	CHIP 100K	1	
R919		ERJ6GCYJ222	CHIP 2.2K	1	
R920		ERJ6GCYJ103	CHIP 10K	1	
R921		ERJ6GCYJ563	CHIP 56K	1	
R922		ERJ6GCYJ103	CHIP 10K	1	
R923		ERJ6GCYK8R2	CHIP 8.2	1	
R924		ERJ6GCYJ333	CHIP 33K	1	
R925		ERJ6GCYJ563	CHIP 56K	1	
R926		ERJ6GCYJ681	CHIP 680	1	
RA901		EXBM16D70CG	RADER RESISTER	1	
RA902		EXBM16D70CG	RADER RESISTER	1	
			CAPACITORS		
C200		ECUX1H103KBN	CERAMIC 50V 0.01	1	
C201		ECUX1H102KN	CERAMIC 50V 1000P	1	
C202		ECUX1H103KBN	CERAMIC 50V 0.01	1	
C203		ECUX1H103KBN	CERAMIC 50V 0.01	1	
C204		ECUX1E473ZFN	CERAMIC 25V 0.047	1	
C206		ECEA1CKS100	ELECTROLYTIC 16V 10	1	
C208		ECEA1HKS010	ELECTROLYTIC 50V 1	1	
C209		ECEA1AKS470	ELECTROLYTIC 10V 47	1	
C210		ECUX1H680KN	CERAMIC 50V 68P	1	
C211		ECUX1E333MDN	CERAMIC 25V 0.033	1	
C212		ECUX1H101KN	CERAMIC 50V 100P	1	
C213		ECEA1AKS220	ELECTROLYTIC 10V 22	1	
C214		ECUX1E104ZFN	CERAMIC 25V 0.1	1	
C216		ECUX1E104ZFN	CERAMIC 25V 0.1	1	
C219		ECUX1E104ZFN	CERAMIC 25V 0.1	1	
C220		ECSF1AE476	TANTALUM 10V 47	1	
C221		ECEA1AU101	ELECTROLYTIC 10V 100	1	
C300		ECUX1H120KN	CERAMIC 50V 12P	1	
C301		ECEA1EKS4R7	ELECTROLYTIC 25V 4.7	1	
C302		ECEA1EKS4R7	ELECTROLYTIC 25V 4.7	1	
C303		ECEA1EKS4R7	ELECTROLYTIC 25V 4.7	1	
C304		ECUX1H222KBN	CERAMIC 50V 2200P	1	
C305		ECRJA050M11	TRIMER 100V 50P	1	
C306		ECSF1AE226	TANTALUM 10V 22	1	
C307		ECUX1H222KBN	CERAMIC 50V 2200P	1	
C308		ECUX1H330KN	CERAMIC 50V 33P	1	
C309		ECUX1E104ZFN	CERAMIC 25V 0.1	1	
C310		ECUX1H222KBN	CERAMIC 50V 2200P	1	
C311		ECUX1H330KN	CERAMIC 50V 33P	1	
C312		ECUX1E104ZFN	CERAMIC 25V 0.1	1	
C313		ECUX1E104ZFN	CERAMIC 25V 0.1	1	
C314		ECUX1E104ZFN	CERAMIC 25V 0.1	1	

Ref.No.		Part No.	Part Name & Description	Pcs	Remarks
C315		ECEA0JKS220	ELECTROLYTIC 6.3V 22	1	
C316		ECUX1E104ZFN	CERAMIC 25V 0.1	1	
C317		ECUX1E104ZFN	CERAMIC 25V 0.1	1	
C318		ECUX1E473ZFN	CERAMIC 25V 0.04	1	
C319		ECUX1E104ZFN	CERAMIC 25V 0.1	1	
C320		ECEA1EKS4R7	ELECTROLYTIC 25V 4.7	1	
C321		ECEA1CKS100	ELECTROLYTIC 16V 10	1	
C322		ECEA1EKS4R7	ELECTROLYTIC 25V 4.7	1	
C323		ECUX1H102KN	CERAMIC 50V 1000P	1	
C324		ECUX1H391KN	CERAMIC 50V 390P	1	
C325		ECSF0JE106	TANTALUM 50V 10	1	
C326		ECUX1E104ZFN	CERAMIC 25V 0.1	1	
C327		ECEA0JKS220	ELECTROLYTIC 6.3V 22	1	
C328		ECUX1H222KBN	CERAMIC 50V 2200P	1	
C329		ECUX1H121KN	CERAMIC 50V 120P	1	
C330		ECEA0JKS470	ELECTROLYTIC 6.3V 47	1	
C331		ECUX1E104ZFN	CERAMIC 25V 0.1	1	
C332		ECEA0JKS470	ELECTROLYTIC 6.3V 47	1	
C333		ECUX1H101KN	CERAMIC 50V 100P	1	
C334		ECUX1E104ZFN	CERAMIC 25V 0.1	1	
C335		ECUX1E104ZFN	CERAMIC 25V 0.1	1	
C400		ECUX1H100FCN	CERAMIC 50V 10P	1	
C401		ECUX1E104ZFN	CERAMIC 25V 0.1	1	
C402		ECUX1H103KBN	CERAMIC 50V 0.01	1	
C403		ECUX1H103KBN	CERAMIC 50V 0.01	1	
C404		ECUX1H103KBN	CERAMIC 50V 0.01	1	
C405		ECUX1H103KBN	CERAMIC 50V 0.01	1	
C406		ECUX1H103KBN	CERAMIC 50V 0.01	1	
C407		ECSF1AE226	TANTALUM 10V 22	1	
C410		ECEA1CKS100	ELECTROLYTIC 16V 10	1	
C411		ECEA0JKS470	ELECTROLYTIC 6.3V 47	1	
C412		ECUX1H473ZFN	CERAMIC 50V 0.047	1	
C413		ECUX1H222KBN	CERAMIC 50V 2200P	1	
C414		ECEA1CKS100	ELECTROLYTIC 16V 10	1	
C415		ECUX1E104ZFN	CERAMIC 25V 0.1	1	
C416		ECUX1E104ZFN	CERAMIC 25V 0.1	1	
C417		ECUX1E104ZFN	CERAMIC 25V 0.1	1	
C418		ECEA1AKS470	ELECTROLYTIC 10V 47	1	
C419		ECEA0JKS470	ELECTROLYTIC 6.3V 47	1	
C420		ECUX1E104ZFN	CERAMIC 25V 0.1	1	
C422		ECEA0JKS470	ELECTROLYTIC 6.3V 47	1	
C423		ECEA0JKS470	ELECTROLYTIC 6.3V 47	1	
C424		ECQV1H683JZ	MYLAR 50V 0.068	1	
C425		ECEA0JKS470	ELECTROLYTIC 6.3V 47	1	
C426		ECUX1E104ZFN	CERAMIC 25V 0.1	1	
C427		ECQB1H223	MYLAR 50V 0.022	1	
C428		ECUX1E104ZFN	CERAMIC 25V 0.1	1	
C429		ECUX1H331KN	CERAMIC 50V 330P	1	
C430		ECEA1CKS100	ELECTROLYTIC 16V 10	1	
C431		ECUX1E104ZFN	CERAMIC 25V 0.1	1	
C432		ECEA0JKS470	ELECTROLYTIC 6.3V 47	1	
C433		ECUX1H120KN	CERAMIC 50V 12P	1	
C434		ECUX1H103KBN	CERAMIC 50V 0.01	1	
C435		ECUX1H103KBN	CERAMIC 50V 0.01	1	
C436		ECUX1H330KN	CERAMIC 50V 33P	1	
C437		ECUX1E104ZFN	CERAMIC 25V 0.1	1	
C440		ECSF1AE226	TANTALUM 10V 22	1	
C441		ECUX1H150KN	CERAMIC 50V 15P	1	
C442		ECRJA030E11	TRIMER 100V 30P	1	
C444		ECUX1H181KN	CERAMIC 50V 180P	1	
C445		ECUX1H103KBN	CERAMIC 50V 0.01	1	
C446		ECUX1H103KBN	CERAMIC 50V 0.01	1	
C447		ECUX1E104ZFN	CERAMIC 25V 0.1	1	
C448		ECUX1H470KN	CERAMIC 50V 47P	1	
C449		ECUX1H120KN	CERAMIC 50V 12P	1	
C506		ECUX1H471KN	CERAMIC 50V 470P	1	
C507		ECUX1H471KN	CERAMIC 50V 470P	1	
C601		ECEA1ASS101	ELECTROLYTIC 10V 100	1	
C602		ECUX1H102KN	CERAMIC 50V 1000P	1	
C603		ECEA1ASS221	ELECTROLYTIC 10V 220	1	
C604		ECUX1H102KN	CERAMIC 50V 1000P	1	
C605		ECEA0JSS101	ELECTROLYTIC 6.3V 100	1	
C606		ECEA0JU221	ELECTROLYTIC 6.3V 220	1	
C607		ECEA1HKS0R1	ELECTROLYTIC 50V 0.1	1	
C608		ECUX1H101KN	CERAMIC 50V 100P	1	

Ref.No.		Part No.	Part Name & Description	Pcs	Remarks
C609		ECEA1HKS010	ELECTROLYTIC 50V 1	1	
C610		ECUX1E104ZFN	CERAMIC 25V 0.1	1	
C611		ECQV1H224JZ	MYLAR 50V 0.22	1	
C612		ECEA1AKS470	ELECTROLYTIC 10V 47	1	
C613		ECUX1H151KN	CERAMIC 50V 150P	1	
C614		ECUX1H473ZFN	CERAMIC 50V 0.04	1	
C615		ECUX1H473ZFN	CERAMIC 50V 0.04	1	
C617		ECUX1H473ZFN	CERAMIC 50V 0.04	1	
C618		ECUX1H473ZFN	CERAMIC 50V 0.04	1	
C619		ECEA0JU101	ELECTROLYTIC 6.3V 100	1	
C620		ECUX1E104ZFN	CERAMIC 25V 0.1	1	
C621		ECQM1102JZ	MYLAR 100V 1000P	1	
C622		ECEA1ASS101	ELECTROLYTIC 10V 100	1	
C623		ECSF1CE476	TANTALUM 16V 47	1	
C624		ECUX1E104ZFN	CERAMIC 25V 0.1	1	
C625		ECUX1E104ZFN	CERAMIC 25V 0.1	1	
C626		ECUX1H151KN	CERAMIC 50V 150P	1	
C627		ECKF1H332MDY	CERAMIC 50V 3300P	1	
C628		ECUX1E104ZFN	CERAMIC 25V 0.1	1	
C629		ECUX1H330KN	CERAMIC 50V 33P	1	
C630		ECUX1H102KN	CERAMIC 50V 1000P	1	
C631		ECEA1HKN010	ELECTROLYTIC 50V 1	1	
C632		ECUX1E104ZFN	CERAMIC 25V 0.1	1	
C633		ECEA1AU101	ELECTROLYTIC 10V 100	1	
C634'		ECQM2182KZ	MYLAR 200V 1800P	1	
C635		ECQM1682KZ	MYLAR 100V 6800P	1	
C636		ECEA1HK100	ELECTROLYTIC 50V 10	1	
C637		ECEA2AU3R3	ELECTROLYTIC 100V 3.3	1	
C638		ECEA2VS010	ELECTROLYTIC 350V 1	1	
C639		VCK0018	CERAMIC 2KV 1500P	1	
C640		VCK0017	CERAMIC 1KV 1500P	1	
C641		ECUX1H121KN	CERAMIC 50V 120P	1	
C642		ECUX1H121KN	CERAMIC 50V 120P	1	
C643		ECEA0JU101	ELECTROLYTIC 6.3V 100	1	
C644		ECUX1H473ZFN	CERAMIC 50V 0.04	1	
C645		ECUX1H470KN	CERAMIC 50V 47P	1	
C646		ECUX1H473ZFN	CERAMIC 50V 0.04	1	
C647		ECUX1H473ZFN	CERAMIC 50V 0.04	1	
C648		ECUX1H331KN	CERAMIC 50V 330P	1	
C649		ECUX1H331KN	CERAMIC 50V 330P	1	
C650		ECUX1H102KN	CERAMIC 50V 1000P	1	
C652		ECUX1H103KBN	CERAMIC 50V 0.01	1	
C653		ECUX1H473ZFN	CERAMIC 50V 0.04	1	
C901		ECEA0JKS470	ELECTROLYTIC 6.3V 47	1	OR ECEA0GKS470
C902		ECEA1AKS470	ELECTROLYTIC 10V 47	1	
C903		ECUX1H330JCN	CERAMIC 50V 33P	1	
C904		ECEA10Z47	ELECTROLYTIC 10V 47	1	
C905		ECUX1E104ZFN	CERAMIC 25V 0.1	1	
C906		ECUX1E104ZFN	CERAMIC 25V 0.1	1	
C907		ECUX1E104ZFN	CERAMIC 25V 0.1	1	
C908		ECUX1E104ZFN	CERAMIC 25V 0.1	1	
			COILS		
L201		VLQ0163K101	100uH	1	
L202		VLQ0133K331	330uH	1	
L301		VLQ0163K150	15uH	1	
L302		VLQ0163K150	15uH	1	
L303		VLQ0163K330	33uH	1	
L304		VLQ0163K330	33uH	1	
L305		VLQ0163K101	100uH	1	
L306		VLQ0163K330	33uH	1	
L401		VLQ0163K330	33uH	1	
L402		VLQ0163K330	33uH	1	
L403		VLQ0163K330	33uH	1	
L404		VLQ0163K101	100uH	1	
L405		VLQ0163K330	33uH	1	
L406		EIC7QE008B	1uH	1	
L407		VLQ0163K330	33uH	1	
L408		VLQ0163K101	100uH	1	
1601		ELC04D001	56uH	1	
L602		EIR7QF005B	22mH	1	
L603		EIR7QF005B	22mH	1	
L901		VLQ0163K101	100uH	1	

Ref.No.		Part No.	Part Name & Description	Pcs	Remarks
			DELAY LINE		
DL301		EFDMT645L83F		1	
DL302		ELB4R002		1	
DL303		ELB4Q006		1	
			FILTERS		
FL202		VLF0378		1	
FL301		ELB4Q007		1	
FL302		ELB4T001		1	
FL303		ELB4Q009		1	
FL401		ELB4Q020		1	
			CONNECTORS		
P201		VJP1231T	4P	1	
P401		VJP1231R	4P	1	
P601		VJP1249T	9P	1	
P602		VJP1245T	5P	1	
P603		VJP1242T	2P	1	
			VARIABLE RESISTORS		
VR201		EVM6QSW00B14	10K	1	
VR202		EVM6QSW00B14	10K	1	
VR203		EVM6QSW00B14	10K	1	
VR204		EVM6QSW00B14	10K	1	
VR205		EVM6QSW00B14	10K	1	
VR301		EVM6QSW00B14	10K	1	
VR302		EVM6QSW00B52	500	1	
VR303		EVM6QSW00B52	500	1	
VR304		EVM6QSW00B13	1K	1	
VR306		EVM6QSW00B54	50K	1	
VR307		EVM6QSW00B54	50K	1	
VR308		EVM6QSW00B54	50K	1	
VR309		EVM6QSW00B14	10K	1	
VR310		EVM6QSW00B54	50K	1	
VR311		EVM6QSW00B54	50K	1	
VR312		EVM6QSW00B54	50K	1	
VR313		EVM6QSW00B54	50K	1	
VR314		EVM6QSW00B54	50K	1	
VR315		EVM6QSW00B54	50K	1	
VR316		EVM6QSW00B54	50K	1	
VR317		EVM6QSW00B54	50K	1	
VR318		EVM6QSW00B54	50K	1	
VR319		EVM6QSW00B54	50K	1	
VR320		EVM6QSW00B54	50K	1	
VR321		EVM6QSW00B14	10K	1	
VR322		EVM6QSW00B15	100K	1	
VR323		EVM6QSW00B15	100K	1	
VR324		EVM6QSW00B14	10K	1	
VR325		EVM6QSW00B54	50K	1	
VR401		EVM6QSW00B13	1K	1	
VR403		EVM6QSW00B24	20K	1	
VR404		EVM6QSW00B13	1K	1	
VR405		EVM6QSW00B13	1K	1	
VR406		EVM6QSW00B54	50K	1	
VR407		EVM6QSW00B14	10K	1	
VR408		EVM6QSW00B14	10K	1	
VR409		EVM6QSW00B14	10K	1	
VR410		EVM6QSW00B14	10K	1	
VR411		EVM6QSW00B14	10K	1	
VR412		EVM6QSW00B14	10K	1	
VR413		EVM6QSW00B53	5K	1	
VR414		EVM6QSW00B53	5K	1	
VR415		EVM6QSW00B13	1K	1	
VR601		EVML4GA00B23	2K	1	
VR602		EVM6QSW00B24	20K	1	
VR603		EVM6QSW00B25	200K	1	

Ref.No.		Part No.	Part Name & Description	Pcs	Remarks
VR604		EVML4GA00B26	2M	1	
VR605		EVM6QSW00B12	100	1	
VR606		EVM6QSW00B23	2K	1	
VR607		EVML4GA00B24	20K	1	
VR608		EVM6QSW00B13	1K	1	
VR609		EVM6QSW00B54	50K	1	
VR610		EVM33GA00BV6	5.6K	1	
VR611		EVML4GA00B26	2M	1	
VR612		EVML4GA00B23	2K	1	
VR901		EVM6QSW00B15	100K	1	
VR902		EVM6QSW00B15	100K	1	
			THERMISTOR		
TH601		ERTD2FCL101S		1	
			TRANSFORMER		
E601		ETF14L3B	F.B.T	1	<!>
			CRYSTAL OSCILLATOR		
X401		VSX0114		1	
			MISCELLANEOUS		
		VSC1341	SHILELD CASE	1	
		VSC1342	SHILELD CASE	1	
		VSC1464	SHILELD CASE	1	
		VSC1581	SHILELD CASE	1	
	■	VEP23043A	SYNC SUB C.B.A.		
			INTEGRATED CIRCUITS		
IC701		MN6160PBS		1	
			TRANSISTORS		
Q701		2SD601		1	
			RESISTORS		
R701		ERJ6GCYJ682	CHIP 6.8K	1	
R702		ERJ6GCYJ152	CHIP 1.5K	1	
R704		ERJ6GCYJ272	CHIP 2.7K	1	
R705		ERJ6GCYJ103	CHIP 10K	1	
R706		ERJ6GCYJ822	CHIP 8.2K	1	
R707		ERJ6GCYJ123	CHIP 12K	1	
R708		ERJ6GCYJ103	CHIP 10K	1	
R709		ERJ6GCYJ123	CHIP 12K	1	
R710		ERJ6GCYJ182	CHIP 1.8K	1	
R711		ERJ6GCYJ822	CHIP 8.2K	1	
R712		ERJ6GCYJ223	CHIP 22K	1	
			CAPACITORS		
C701		ECUX1E473ZFN	CERAMIC 25V 0.047	1	
C702		ECUX1E473ZFN	CERAMIC 25V 0.047	1	
C703		ECUX1H471KN	CERAMIC 50V 470P	1	
C704		ECUX1H330KN	CERAMIC 50V 33P	1	

Ref.No.		Part No.	Part Name & Description	Pcs	Remarks
	■	VEP20187A	CAMERA SENSOR C.B.A.		
			INTEGRATED CIRCUITS		
IC501		NJM2902M		1	
IC502		VCR0122		1	
			RESISTORS		
R501		ERJ6GCYJ103	CHIP 10K	1	
R502		VRE0022		1	
R503		ERJ6GCYJ392	CHIP 3.9K	1	
R504		ERJ6GCYJ824	CHIP 820K	1	
R505		ERJ6GCYG333	CHIP 33K	1	
R506		ERJ6GCYG333	CHIP 33K	1	
R507		ERJ6GCYJ103	CHIP 10K	1	
R508		ERJ6GCYJ103	CHIP 10K	1	
R509		ERJ6GCYJ333	CHIP 33K	1	
R510		ERJ6GCYJ333	CHIP 33K	1	
R511		ERJ6GCYJ103	CHIP 10K	1	
R512		VRE0023		1	
R513		VRE0023		1	
R514		ERJ6GCYJ223	CHIP 22K	1	
R515		ERJ6GCYJ333	CHIP 33K	1	
R516		ERJ6GCYJ103	CHIP 10K	1	
			CAPACITORS		
C501		ECEA10Z22	ELECTROLYTIC 10V 22	1	
C502		ECEA10Z22	ELECTROLYTIC 10V 22	1	
C503		ECEA1HU010	ELECTROLYTIC 50V 1	1	
C504		ECKF1H103ZF	CERAMIC 50V 10	1	
C505		ECKF1H103ZF	CERAMIC 50V 10	1	
C506		ECUX1H471KN	CERAMIC 50V 470P	1	
C507		ECUX1H471KN	CERAMIC 50V 470P	1	
			CONNECTORS		
P501		VJP1231T	4P	1	
			VARIABLE RESISTERS		
VR501		EVM6QSW00BE3	2.2K	1	
VR502		EVM6QSW00B14	10K	1	
			COLOUR SENSOR		
PD501		PN1361	PHOTO TRANSISTOR	1	
	■	VEP26041A	CAMERA OPERATION C.B.A.		
			RESISTERS		
R01		ERJ6GCYJ562	CHIP 5.6K	1	
R02		ERJ6GCYJ563	CHIP 56K	1	
R03		ERJ6GCYJ154	CHIP 150K	1	
R04		ERJ6GCYJ563	CHIP 56K	1	
R05		ERJ6GCYJ822	CHIP 8.2K	1	
			VARIABLE RESISTER		
VR02		VRV0038	10K	1	

Ref.No.		Part No.	Part Name & Description	Pcs	Remarks
			CONNECTOR		
P01		VJP1245T	5P	1	
			SWITCHES		
SW01		VSS0143	AWT SW	1	
SW02		VSP0152	AWC SET SW	1	
	■	VEP20188A	ZOOM C.B.A.		
			TRANSISTORS		
Q801		2SB641		1	(R,S)
Q802		2SD636		1	(R,S)
Q803		2SB641		1	(R,S)
Q804		2SD636		1	(R,S)
Q805		2SD636		1	(R,S)
Q806		2SD636		1	(R,S)
			RESISTERS		
R801		ERDS2TJ272	2.7K	1	
R802		ERDS2TJ272	2.7K	1	
R803		ERDS2TJ223	2.2K	1	
R804		ERDS2TJ272	2.7K	1	
R805		ERDS2TJ272	2.7K	1	
R806		ERDS2TJ223	22K	1	
R807		ERDS2TJ470	47	1	
R808		ERDS2TJ470	47	1	
R809		ERDS2TJ562	5.6K	1	
R810		ERDS2TJ682	6.8K	1	
			CAPASITOR		
C801		ECEA0JK221	ELECTROLYTIC 6.3V 220	1	
			CONNECTORS		
P801		VJP1242T	2P	1	
P802		VJP1242R	2P	1	
P803		VJP1243T	3P	1	
			THERMISTOR		
TH801		ERTD2FHK202S		1	
			SWITCHES		
SW802		EVQQS205K	REC REV SW	1	
SW803		VSP0148	ZOOM SW	1	
SW804		VSP0148	ZOOM SW	1	
	■	VEP00F17C	E.V.F. C.B.A.		
			INTEGRATED CIRCUIT		
IC101		AN2510S		1	

Ref.No.		Part No.	Part Name & Description	Pcs	Remarks
			RESISTORS		
R101		ERJ8GCYJ222	2.2K	1	
R102		ERJ8GCYJ561	560	1	
R103		ERD2FCG100	FUSE 10	1	
R104		ERJ8GCYJ182	1.8K	1	
R105		ERJ8GCYJ332	3.3K	1	
R106		ERJ8GCYG682	6.8K	1	
R107		ERJ8GCYJ151	150	1	
R108		ERJ8GCYJ102	1K	1	
R109		ERJ8GCYK3R9	3.9	1	
R110		ERJ8GCYJ102	1K	1	
R111		ERJ8GCYJ222	2.2K	1	
R112		ERJ8GCYJ683	68K	1	
R113		ERJ8GCYJ562	5.6K	1	
R114		ERJ8GCYJ180	18	1	
R115		ERQ14AJ3R3P	1/4W 3.3	1	
			VARIABLE RESISTORS		
VR101		EVNB1AA00B22	200	1	V-HEIGHT
VR102		EVNB1AA00B53	5K	1	H-HOLD
			CAPACITORS		
C101		ECEA1HKNR22	ELECTROLYTIC 50V 0.22	1	
C102		ECEA0JK221	ELECTROLYTIC 6.3V 220	1	
C103		ECEA1AKS330	ELECTROLYTIC 10V 33	1	OR ECEA1AK330
C104		VCF0037	MALAR 63V 0.68	1	
C105		ECEA1AKS330	ELECTROLYTIC 10V 33	1	OR ECEA1AK330
C106		ECKF1H561KB	CERAMIC 50V 560	1	
C107		ECUX1H223KBM	CERAMIC 50V 0.022	1	
C108		ECEA1CKS100	ELECTROLYTIC 16V 10	1	OR ECEA1CK100
C109		VCF0039	MALAR 50V 1500P	1	
C110		ECEA0JKS101	ELECTROLYTIC 6.3V 100	1	
C111		ECEA0JKS101	ELECTROLYTIC 6.3V 100	1	OR ECEA0JK101
					OR ECEA1AK101
			COIL		
L101		VEK2451		1	
			IC PROTECTOR		
CP101		VSF0015A04		1	
			THERMISTOR		
TH101		VRT0012		1	
			THERMAL FUSE		
TF101		VSF0044		1	
	■	VEP00F18C	HIGH VOLTAGE C.B.A.		
			TRANSISTORS		
Q201		2SD763		1	OR 2SD974,
					2SC2235
Q202		2SD958		1	
Q203		2SA564		1	

Ref.No.		Part No.	Part Name & Description	Pcs	Remarks
			DIODES		
D201		MA150		1	
D202		MA162		1	
D203		V06C		1	
D204		V11J		1	
			RESISTORS		
R201		VRE0059B222	2.2K	1	
R202		VRE0059B824	820K	1	
R203		VRE0059B155	1.5M	1	
R204		VRE0059B224	220K	1	
R205		VRE0059B102	1K	1	
R206		VRE0059B393	39K	1	
R207		VRE0059B103	10K	1	
R208		VRE0059B122	1.2K	1	
R209		VRE0059B103	10K	1	
R210		VRE0059B105	1M	1	
R211		VRE0059B101	100	1	
R212		VRE0059B472	4.7K	1	
			VARIABLE RESISTORS		
VR201		VRV0040B225	2.2M	1	FOCUS
VR202		VRV0040B474	470K	1	BRIGHT
VR203		VRV0040B222	2.2K	1	CONTRAST
			CAPACITORS		
C201		ECEA1CKS100	ELECTROLYTIC 16V 10	1	
C202		ECEA1ASS470	ELECTROLYTIC 10V 47	1	
C203		VCF0040	MYLAR 100V 1800P	1	
C204		ECEA1HKS4R7	ELECTROLYTIC 50V 4.7	1	
C205		ECEA1AKS220	ELECTROLYTIC 10V 22	1	
C206		ECKF1H271KB	CERAMIC 50V 270P	1	
C207		ECEA1AK101	ELECTROLYTIC 10V 100	1	OR ECEAIASS101
C208		VCK0027	CERAMIC 1KV 1500P	1	
C209		VCK0028	CERAMIC 500V 1500P	1	
C210		VCF0035	MYLAR 100V 0.033	1	OR VCF0036
C211		ECEA1HKS010	ELECTROLYTIC 50V 1	1	OR ECEA1HK010
			COILS		
L201		VLQ0175	700uH	1	
L202		VLQ0176	100uH	1	OR ELEH101KA
			TRANSFORMER		
T201		VLT0248	F.B.T.	1	
			IC PROTECTOR		
CP201		VSF0015A04			
				1	
			TEMPERATURE FUSE		
TF201		VSF0040		1	<!>
	■	VJB00F19	CONNECTOR C.B.		
			CONNECTOR		
		VJP1640T	7P	1	

Ref.No.		Part No.	Part Name & Description	Pcs	Remarks
	■	VJB00F20	LED C.B.		
			DIODE		
D301		LN251RPP.WE	LED	1	
			RESISTOR		
R301		ERJ8GCYJ332	3.3K	1	
	■	VEP00F61A	AUTO FOCUS C.B.A.		
			INTEGRATED CIRCUIT		
IC1		AN6552S		1	
IC2		AN6552S		1	
IC3		AN2581S		1	
IC4		AN78L05		1	
IC5		AN1324NS		1	OR AN6564NS
IC6		NJM2902M		1	
IC7		MN1551VXNS		1	OR MN1551VXN
IC8		AN6914S		1	
			TRANSISTORS		
Q1		2SD601		1	(Q,R,S)
Q2		2SD601		1	(Q,R,S)
Q3		2SD1742		1	(P,Q)
Q4		2SD602		1	(Q,R,S)
Q5		2SD601		1	(Q,R,S)
Q6		2SB709		1	(Q,R,S)
Q10		2SD602		1	(Q,R,S)
Q11		2SD973		1	(Q,R,S)
Q12		2SB793		1	(Q,R,S)
Q13		2SB970		1	(Q,R,S)
Q16		2SD601		1	(Q,R,S)
Q17		2SD601		1	(Q,R,S)
			DIODE		
D1		MA151		1	
			COMBINATION PARTS		
			(TRANSISTOR & RESISTOR)		
QR7		UN2121		1	
QR8		UN2121		1	
QR9		UN2221		1	
QR10		2SD602		1	
QR14		UN2213		1	
QR18		UN2213		1	
			RESISTORS		
R1		ERO25UKF1004	1M	1	
R2		ERJ6GCYJ224	CHIP 220K	1	
R3		ERJ6GCYJ224	CHIP 220K	1	
R4		ERO25UKF1004	1M	1	
R5		ERJ6GCYJ153	CHIP 15K	1	
R6		ERJ6GCYJ153	CHIP 15K	1	
R7		ERJ6GCYJ562	CHIP 5.6K	1	

Ref.No.		Part No.	Part Name & Description	Pcs	Remarks
R8		ERJ6GCYJ562	CHIP 5.6K	1	
R11		EROS2HKF4702	47K	1	
R12		EROS2HKF4702	47K	1	
R14		EROS2HKF2703	270K	1	
R15		EROS2HKF2703	270K	1	
R16		ERJ6GCYJ153	CHIP 15K	1	
R17		ERJ6GCYJ153	CHIP 15K	1	
R18		ERJ6GCYJ223	CHIP 22K	1	
R19		ERJ6GCYJ563	CHIP 56K	1	
R20		ERJ6GCYJ153	CHIP 15K	1	
R21		ERJ6GCYJ153	CHIP 15K	1	
R22		ERJ6GCYJ563	CHIP 56K	1	
R23		ERJ6GCYJ103	CHIP 10K	1	
R24		ERJ6GCYJ103	CHIP 10K	1	
R27		EROS2HKF2701	2.7K	1	
R28		EROS2HKF2201	2.2K	1	
R29		EROS2HKF1002	10K	1	
R30		EROS2HKF2202	22K	1	
R31		ERDS2TJ1R0	1K	1	
R32		ERJ6GCYJ121	CHIP 120	1	
R33		ERJ6GCYJ471	CHIP 470	1	
R34		ERJ6GCYJ103	CHIP 10K	1	
R35		ERJ6GCYJ272	CHIP 2.7K	1	
R36		ERJ6GCYJ122	CHIP 1.2K	1	
R38		ERJ6GCYJ183	CHIP 18K	1	
R39		ERJ6GCYJ183	CHIP 18K	1	
R40		ERJ6GCYJ562	CHIP 5.6K	1	
R41		ERJ6GCYJ223	CHIP 22K	1	
R42		ERJ6GCYJ473	CHIP 47K	1	
R43		ERJ6GCYJ332	CHIP 3.3K	1	
R44		ERJ6GCYJ332	CHIP 3.3K	1	
R45		ERJ6GCYJ472	CHIP 4.7K	1	
R46		ERJ6GCYJ332	CHIP 3.3K	1	
R47		ERJ6GCYJ183	CHIP 18K	1	
R49		ERJ6GCYJ183	CHIP 18K	1	
R50		ERJ6GCYJ183	CHIP 18K	1	
R53		ERJ6GCYJ104	CHIP 100K	1	
R54		ERJ6GCYJ124	CHIP 120K	1	
R55		ERJ6GCYJ104	CHIP 100K	1	
R56		ERJ6GCYJ104	CHIP 100K	1	
R57		ERJ6GCYJ104	CHIP 100K	1	
R58		ERJ6GCYJ104	CHIP 100K	1	
R59		ERJ6GCYJ104	CHIP 100K	1	
R60		ERJ6GCYJ104	CHIP 100K	1	
R61		ERJ6GCYJ183	CHIP 18K	1	
R62		ERJ6GCYJ183	CHIP 18K	1	
R64		ERJ6GCYJ333	CHIP 33K	1	
R65		ERJ6GCYJ222	CHIP 2.2K	1	
R75		ERJ6GCYJ333	CHIP 33K	1	
R76		ERJ6GCYJ333	CHIP 33K	1	
R77		ERJ6GCYJ104	CHIP 100K	1	
R78		ERJ6GCYJ222	CHIP 2.2K	1	
R79		ERJ6GCYJ473	CHIP 47K	1	
R80		ERJ6GCYJ153	CHIP 15K	1	
R90		ERJ6GCYJ153	CHIP 15K	1	
R99		ERJ6GCYJ102	CHIP 1K	1	
RA1		EXBM16D80AG		1	
			VARIABLE RESISTORS		
VR1		EVN3ACA00B14	10K	1	
VR2		EVN3ACA00B14	10K	1	
VR3		EVN3ACA00B13	1K	1	
VR4		EVN3ACA00B24	20K	1	
			CAPACITORS		
C1		ECUX1E333KBM	CERAMIC 25V 0.033	1	
C2		ECUX1E333KBM	CERAMIC 25V 0.033	1	
C3		ECUX1H030CCN	CERAMIC 50V 3P	1	
C4		ECUX1H030CCN	CERAMIC 50V 3P	1	
C5		ECUX1E103KBN	CERAMIC 25V 0.01	1	
C6		ECUX1E103KBN	CERAMIC 25V 0.01	1	

Ref.No.		Part No.	Part Name & Description	Pcs	Remarks
C7		ECSF1CE105	TANTALUM 16V 1	1	
C8		ECSF1CE105	TANTALUM 16V 1	1	
C9		ECUX1E103KBN	CERAMIC 25V 0.01	1	
C10		ECUX1E103KBN	CERAMIC 25V 0.01	1	
C11		ECUX1E103KBN	CERAMIC 25V 0.01	1	
C12		ECUX1E103KBN	CERAMIC 25V 0.01	1	
C13		ECSF1AE225	TANTALUM 10V 2.2	1	
C14		ECUX1E103KBN	TANTALUM 25V 0.01	1	
C15		ECUX1H472KBN	CERAMIC 50V 4700P	1	
C16		ECUX1E104ZFM	CERAMIC 25V 0.1	1	
C17		ECEA1CKN100	ELECTROLYTIC 16V 10	1	
C18		ECEA1CKN100	ELECTROLYTIC 16V 10	1	
C19		ECEA1EU101	ELECTROLYTIC 25V 100	1	
C20		ECEA1CKS100	ELECTROLYTIC 16V 10	1	
C21		ECEA1EU101	ELECTROLYTIC 25V 100	1	
C22		ECEA1CKS100	ELECTROLYTIC 16V 10	1	
C23		ECUX1E103KBN	CERAMIC 25V 0.1	1	
C24		ECEA1CKS100	ELECTROLYTIC 16V 10	1	
C25		ECSF1AE106	TANTALUM 10V 10	1	
C26		ECEA1CKS100	ELECTROLYTIC 16V 10	1	
C27		ECSF1AE225	TANTALUM 10V 2.2	1	
C28		ECSF1AE225	TANTALUM 10V 2.2	1	
C29		ECEA1CKS100	ELECTROLYTIC 16V 10	1	
C31		ECEA1CKS100	ELECTROLYTIC 16V 10	1	
C32		ECSF1VE684	TANTALUM 35V 0.68	1	
C33		ECUX1H220KCN	CERAMIC 50V 22P	1	
C34		ECUX1H220KCN	CERAMIC 50V 22P	1	
C35		ECUX1E103KBN	CERAMIC 50V 0.01	1	
C36		ECUX1E103KBN	CERAMIC 25V 0.01	1	
C37		ECUX1E103KBN	CERAMIC 25V 0.01	1	
C38		ECUX1E103KBN	CERAMIC 25V 0.01	1	
C39		ECUX1E103KBN	CERAMIC 25V 0.01	1	
C40		ECUX1E103KBN	CERAMIC 25V 0.01	1	
C47		ECUX1H221JCN	CERAMIC 50V 220	1	
C48		ECUX1H221JCN	CERAMIC 50V 220	1	
C49		ECUX1H221JCN	CERAMIC 50V 220	1	
C50		ECUX1H221JCN	CERAMIC 50V 220	1	
C51		ECUX1E104ZFN	CERAMIC 25V 0.1	1	
C99		ECUX1E104ZFN	CERAMIC 25V 0.1	1	
			COILS		
L1		VLQEL05F331K	330uH	1	
L2		VLQEL05F101K	100uH	1	
			CRYSTAL OSCILLATOR		
X1		VSX0155		1	
			CONNECTORS		
P1		VJP1231T	4P	1	
P2		VJP1243T	3P	1	
P3		VJP1229R	2P	1	
P4		VJP1230T	3P	1	
P5		VJP1229T	2P	1	
P6		VJP1234T	7P	1	
			MISCELLANEOUS		
		VGQ0917	SHIELD PLATE	1	
	■	VJB26044	AUTO FOCUS SW C.B.		
			SWITCHES		
SW1		VSS0134		1	
SW2		EVQQSU05G		1	

Ref.No.		Part No.	Part Name & Description	Pcs	Remarks
			CONNECTOR		
P11		VJP1242T	2P	1	
	■	VJB20184	IR LED C.B.		
			DIODE		
		VLL0036	LED	1	
	■	VJB20183	PSD C.B.		
			PSD		
PD501		PN1361		1	
	■	VEP06336A	MAIN C.B.A.		
			(POWER, SERVO, SYSTEM		
			CONTROL)		
			(POWER SUPPLY SECTION)		
			INTEGRATED CIRCUITS		
IC1001		BA6149LS		1	
IC1002		UN102		1	
			TRANSISTORS		
Q1001		2SB709		1	(Q,R,S)
Q1002		2SB709		1	(Q,R,S)
Q1003		2SB709		1	(S)
Q1004		2SD1328		1	(S)
Q1005		2SD1328		1	(S)
Q1006		2SD1030		1	(S)
			DIODES		
D1001		MA151K		1	
D1002		MA3062M		1	
			RESISTORS		
R1001		ERJ6GCYJ473	CHIP 47K	1	
R1002		ERJ6GCYJ222	CHIP 2.2K	1	
R1003		ERJ6GCYJ103	CHIP 10K	1	
R1004		ERJ6GCYJ222	CHIP 2.2K	1	
R1005		ERJ6GCYJ103	CHIP 10K	1	
R1006		ERJ6GCYJ472	CHIP 4.7K	1	
R1007		ERJ6GCYJ103	CHIP 10K	1	
R1008		ERJ6GCYJ154	CHIP 150K	1	
R1009		ERJ6GCYJ154	CHIP 150K	1	
R1010		ERJ6GCYJ472	CHIP 4.7K	1	
R1011		ERJ6GCYJ103	CHIP 10K	1	
R1012		ERDS2TJ122	1.2K	1	
R1013		ERDS2TJ122	1.2K	1	

Ref.No.		Part No.	Part Name & Description	Pcs	Remarks
R1014		ERDS2TJ152	1.5K	1	
R1015		ERDS2TJ152	1.5K	1	
R1016		ERJ6GCYJ472	CHIP 4.7K	1	
R1017		ERJ6GCYJ103	CHIP 10K	1	
R1018		ERDS2TJ122	1.2K	1	
R1019		ERDS2TJ821	820	1	
R1020		ERJ6GCYJ153	CHIP 15K	1	
R1021		ERJ6GCYJ153	CHIP 15K	1	
R1022		ERJ6GCYJ681	CHIP 680	1	
R1023		ERJ6GCYJ681	CHIP 680	1	
R1024		ERJ6GCYJ393	CHIP 39K	1	
R1025		ERJ6GCYJ123	CHIP 12K	1	
R1026		ERJ6GCYJ391	CHIP 390	1	
R1027		ERJ6GCYJ391	CHIP 390	1	
R1028		ERJ6GCYJ391	CHIP 390	1	
R1029		ERJ6GCYJ391	CHIP 390	1	
R1030		ERJ6GCYJ391	CHIP 390	1	
R1031		ERJ6GCYJ391	CHIP 390	1	
R1032		ERJ6GCYJ102	CHIP 1K	1	
R1033		ERJ6GCYJ563	CHIP 56K	1	
R1034		ERJ6GCYJ123	CHIP 12K	1	
			CAPACITORS		
C1001		ECUX1H820JCN	CERAMIC 50V 82P	1	
C1002		ECUX1H561KBN	CERAMIC 50V 560P	1	
C1003		ECUX1H561KBN	CERAMIC 50V 560P	1	
C1004		ECEA1HKS010	ELECTROLYTIC 50V 1	1	
C1005		ECUX1E473ZFM	CERAMIC 25V 0.047	1	
C1006		ECUX1E473ZFM	CERAMIC 25V 0.047	1	
C1007		ECEA1CK101	ELECTROLYTIC 16V 100	1	
C1008		ECEA1HKSR47	ELECTROLYTIC 50V 0.47	1	
C1009		ECEA1HKS2R2	ELECTROLYTIC 50V 2.2	1	
C1010		ECEA1CK101	ELECTROLYTIC 16V 100	1	
C1011		ECUX1E473ZFM	CERAMIC 25V 0.047	1	
C1012		ECEA0JSS471	ELECTROLYTIC 6.3V 470	1	
C1015		ECEA1ASS331	ELECTROLYTIC 10V 330	1	
C1016		ECEA1AK221	ELECTROLYTIC 10V 330	1	
C1017		ECEA0JKS330	ELECTROLYTIC 6.3V 33	1	
C1018		ECUX1E473ZFM	CERAMIC 25V 0.047	1	
C1019		ECEA1AK221	ELECTROLYTIC 10V 220	1	
C1020		ECEA1CK101	ELECTROLYTIC 16V 100	1	
C1021		ECEA1CK101	ELECTROLYTIC 16V 100	1	
C1022		ECEA1CK101	ELECTROLYTIC 16V 100	1	
C1023		ECEA0JKS330	ELECTROLYTIC 6.3V 33	1	
C1024		ECUX1H103ZFM	CERAMIC 50V 0.01	1	
C1025		ECUX1H104ZFM	CERAMIC 25V 0.01	1	
			COILS		
L1001		ELC08D011		1	OR ELC08D022 <!>
L1002		ELC08D010		1	OR ELC08D021 <!>
L1003		VLQ0128	47uH	1	<!>
L1004		VLQ0128	47uH	1	<!>
L1005		ELC08D015	400uH	1	OR ELC08D023 <!>
L1006		VLQ0129	290uH	1	OR ELC08D024 <!>
L1007		VLQ0129	290uH	1	OR ELC08D024 <!>
L1008		VLQ0128	47uH	1	<!>
			CRYSTAL OSCILLATOR		
X1001		VSX0136		1	
			CONNECTORS		
P1001		VJP1230T	3P	1	
			VARIABLE RESISTORS		
VR1002		EVMLGGA00B14	10K	1	

Ref.No.		Part No.	Part Name & Description	Pcs	Remarks
VR1003		EVML3GA00B14	10K	1	
			PROTECTORS		
PR1001		VSF0014A10		1	<!>
PR1002		VSF0014A08		1	<!>
			(SERVO SECTION)		
			INTEGRATED CIRCUITS		
IC2001		MN6179VBES		1	
IC2002		AN3792S		1	
IC2003		AN6562S		1	
IC2004		AN6562S		1	
IC2005		TA7745P		1	
IC2006		AN3821K		1	
IC2007		uPC1542AG		1	
			TRANSISTORS		
Q2001		2SD601		1	(Q,R,S)
Q2002		2SB709		1	(Q,R,S)
Q2003		2SD601		1	(Q,R,S)
Q2004		2SB709		1	(Q,R,S)
Q2005		2SB709		1	(Q,R,S)
Q2006		2SD601		1	(Q,R,S)
Q2007		2SB709		1	(Q,R,S)
Q2008		2SD601		1	(Q,R,S)
Q2009		2SB819		1	(R,S)
Q2010		2SB819		1	(R,S)
Q2011		2SB819		1	(R,S)
Q2012		2SD601		1	(Q,R,S)
Q2013		2SD601		1	(Q,R,S)
Q2014		2SD601		1	(Q,R,S)
Q2015		2SB709		1	(Q,R,S)
Q2016		2SD601		1	(Q,R,S)
Q2017		2SD601		1	(Q,R,S)
Q2018		2SD601		1	(Q,R,S)
			DIODES		
D2001		MA151WK		1	
D2002		MA151K		1	
D2003		MA153		1	
D2004		MA151K		1	
D2005		MA151WK		1	
D2006		MA151K		1	
D2007		MA153		1	
D2008		MA153		1	
			RESISTORS		
R2001		ERJ6GCYJ562	CHIP 5.6K	1	
R2002		ERJ6GCYJ333	CHIP 33K	1	
R2003		ERJ6GCYJ333	CHIP 33K	1	
R2004		ERJ6GCYJ154	CHIP 150K	1	
R2005		ERJ6GCYJ104	CHIP 100K	1	
R2006		ERJ6GCYJ154	CHIP 150K	1	
R2007		ERJ6GCYJ474	CHIP 470K	1	
R2008		ERJ6GCYJ823	CHIP 82K	1	
R2011		ERJ6GCYJ223	CHIP 22K	1	
R2012		ERJ6GCYJ103	CHIP 10K	1	
R2013		ERJ6GCYJ823	CHIP 82K	1	
R2014		ERJ6GCYJ273	CHIP 27K	1	
R2015		ERJ6GCYJ333	CHIP 33K	1	
R2016		ERJ6GCYJ473	CHIP 47K	1	
R2017		ERJ6GCYJ333	CHIP 33K	1	
R2018		ERJ6GCYJ102	CHIP 1K	1	

Ref.No.		Part No.	Part Name & Description	Pcs	Remarks
R2019		ERJ6GCYJ332	CHIP 3.3K	1	
R2020		ERJ6GCYJ222	CHIP 2.2K	1	
R2021		ERJ6GCYJ222	CHIP 2.2K	1	
R2022		ERJ6GCYJ224	CHIP 220K	1	
R2023		ERJ6GCYJ224	CHIP 220K	1	
R2024		ERJ6GCYJ563	CHIP 56K	1	
R2025		ERJ6GCYJ102	CHIP 1K	1	
R2026		ERJ6GCYJ223	CHIP 22K	1	
R2027		ERJ6GCYJ223	CHIP 22K	1	
R2028		ERJ6GCYJ683	CHIP 68K	1	
R2029		ERJ6GCYJ222	CHIP 2.2K	1	
R2030		ERJ6GCYJ103	CHIP 10K	1	
R2031		ERJ6GCYJ333	CHIP 33K	1	
R2032		ERJ6GCYJ394	CHIP 390K	1	
R2033		ERJ6GCYJ121	CHIP 120	1	
R2034		ERJ6GCYJ273	CHIP 27K	1	
R2035		ERJ6GCYJ101	CHIP 100	1	
R2036		ERJ6GCYJ222	CHIP 2.2K	1	
R2037		ERJ6GCYJ103	CHIP 10K	1	
R2038		ERJ6GCYJ103	CHIP 10K	1	
R2039		ERJ6GCYJ123	CHIP 12K	1	
R2040		ERJ6GCYJ103	CHIP 10K	1	
R2041		ERJ6GCYJ472	CHIP 4.7K	1	
R2042		ERJ6GCYJ333	CHIP 33K	1	
R2043		ERJ6GCYJ102	CHIP 1K	1	
R2044		ERJ6GCYJ183	CHIP 18K	1	
R2045		ERJ6GCYJ562	CHIP 5.6K	1	
R2046		ERJ6GCYJ104	CHIP 100K	1	
R2047		ERJ6GCYJ103	CHIP 10K	1	
R2048		ERJ6GCYJ223	CHIP 22K	1	
R2049		ERJ6GCYJ562	CHIP 5.6K	1	
R2050		ERJ6GCYJ683	CHIP 68K	1	
R2051		ERDS2TJR68	0.68	1	
R2052		ERJ6GCYJ224	CHIP 220K	1	
R2053		ERJ6GCYJ224	CHIP 220K	1	
R2054		ERJ6GCYJ224	CHIP 220K	1	
R2055		ERJ6GCYJ822	CHIP 8.2K	1	
R2056		ERJ6GCYJ561	CHIP 560	1	
R2057		ERJ6GCYJ392	CHIP 3.9K	1	
R2058		ERJ6GCYJ561	CHIP 560	1	
R2059		ERJ6GCYJ392	CHIP 3.9K	1	
R2060		ERJ6GCYJ561	CHIP 560	1	
R2061		ERJ6GCYJ392	CHIP 3.9K	1	
R2062		ERJ6GCYJ332	CHIP 3.3K	1	
R2063		ERJ6GCYJ223	CHIP 22K	1	
R2064		ERJ6GCYJ103	CHIP 10K	1	
R2065		ERJ6GCYJ102	CHIP 1K	1	
R2066		ERJ6GCYJ333	CHIP 33K	1	
R2067		ERJ6GCYJ561	CHIP 560	1	
R2068		ERJ6GCYJ103	CHIP 10K	1	
R2069		ERJ6GCYJ472	CHIP 4.7K	1	
R2070		ERJ6GCYJ103	CHIP 10K	1	
R2071		ERJ6GCYJ103	CHIP 10K	1	
R2072		ERJ6GCYJ332	CHIP 3.3K	1	
R2073		ERJ6GCYJ332	CHIP 3.3K	1	
R2074		ERJ6GCYJ332	CHIP 3.3K	1	
R2075		ERJ6GCYJ332	CHIP 3.3K	1	
R2076		ERJ6GCYJ103	CHIP 10K	1	
R2077		ERJ6GCYJ333	CHIP 33K	1	
R2078		ERJ6GCYJ103	CHIP 10K	1	
R2079		ERJ6GCYJ103	CHIP 10K	1	
R2080		ERJ6GCYJ103	CHIP 10K	1	
R2081		ERJ6GCYJ103	CHIP 10K	1	
R2082		ERJ6GCYJ821	CHIP 820	1	
R2083		ERJ6GCYJ151	CHIP 150	1	
R2084		ERJ6GCYJ151	CHIP 150	1	
R2085		ERJ6GCYJ102	CHIP 1K	1	
R2086		ERJ6GCYJ823	CHIP 82K	1	
R2087		ERDS1TJ1R0	1	1	
R2088		ERDS2TJ2R2	2.2	1	
R2089		ERJ6GCYJ333	CHIP 33K	1	
R2090		ERJ6GCYJ105	CHIP 1M	1	
R2091		ERJ6GCYJ104	CHIP 100K	1	
R2092		ERJ6GCYJ394	CHIP 390K	1	
R2093		ERJ6GCYJ104	CHIP 100K	1	

Ref.No.		Part No.	Part Name & Description	Pcs	Remarks
R2094		ERJ6GCYJ104	CHIP 100K	1	
R2095		ERJ6GCYJ333	CHIP 33K	1	
			CAPACITORS		
C2001		ECUX1H103ZFN	CERAMIC 50V 0.01	1	
C2002		ECUX1H472KBN	CERAMIC 50V 0.047	1	
C2003		ECEA1HKS010	ELECTROLYTIC 50V 1	1	
C2004		ECEA0JKS220	ELECTROLYTIC 6.3V 22	1	
C2005		ECEA0GKS470	ELECTROLYTIC 4V 47	1	
C2006		ECUX1E223ZFN	CERAMIC 25V 0.022	1	
C2007		ECWM1H273JZ	MYLAR 50V 0.027	1	
C2008		ECSF16ER33X1	TANTALUM 0.33	1	
C2009		ECUX1E473ZFN	CERAMIC 25V 0.047	1	
C2010		ECUX1E473ZFN	CERAMIC 25V 0.047	1	
C2011		ECUX1H332KBN	CERAMIC 50V 3300P	1	
C2012		ECUX1H472KBN	CERAMIC 50V 4700P	1	
C2013		ECWM1H152JZ	MYLAR 50V 1500P	1	
C2014		ECEA0GKS470	ELECTROLYTIC 4V 47	1	
C2015		ECEA0JKS470	ELECTROLYTIC 6.3V 47	1	
C2016		ECEA1CKS100	ELECTROLYTIC 16V 10	1	
C2017		ECEA1CKS100	ELECTROLYTIC 16V 10	1	
C2018		ECUX1H102KBN	CERAMIC 50V 1000P	1	
C2019		ECUX1H223ZFN	CERAMIC 50V 0.022	1	
C2020		ECEA0JKS470	ELECTROLYTIC 6.3V 47	1	
C2021		ECUX1E104ZFN	CERAMIC 25V 0.1	1	
C2022		ECEA1HKSR47	ELECTROLYTIC 50V 0.47	1	
C2023		ECEA1HKSR47	ELECTROLYTIC 50V 0.47	1	
C2024		ECEA1HKSR47	ELECTROLYTIC 50V 0.47	1	
C2025		ECUX1H472KBN	CERAMIC 50V 4700P	1	
C2026		ECUX1H472KBN	CERAMIC 50V 4700P	1	
C2027		ECUX1H472KBN	CERAMIC 50V 4700P	1	
C2028		ECEA0JKS470	ELECTROLYTIC 6.3V 47	1	
C2029		ECEA0JKS470	ELECTROLYTIC 6.3V 47	1	
C2030		ECEA0JKS220	ELECTROLYTIC 6.3V 22	1	
C2031		ECEA0JKS220	ELECTROLYTIC 6.3V 22	1	
C2032		ECUX1E473ZFN	CERAMIC 25V 0.047	1	
C2033		ECEA1VSN2R2	ELECTROLYTIC 35V 2.2	1	
C2034		ECUX1H222KBN	CERAMIC 50V 2200P	1	
C2035		ECEA1HKS010	ELECTROLYTIC 50V 1	1	
C2036		ECUX1H152KBN	CERAMIC 50V 1500P	1	
C2037		ECEA1HKN010	ELECTROLYTIC 50V 1	1	
C2038		ECEA1HKSR47	ELECTROLYTIC 50V 0.47	1	
C2039		ECUX1E104ZFN	CERAMIC 25V 0.1	1	
C2040		ECEA1HKS010	ELECTROLYTIC 50V 1	1	
C2041		ECUX1H472KBN	CERAMIC 50V 4700P	1	
C2042		ECUX1H472KBN	CERAMIC 50V 4700P	1	
C2043		ECUX1H472KBN	CERAMIC 50V 4700P	1	
C2044		ECEA1VSN2R2	ELECTROLYTIC 35V 2.2	1	
C2045		ECEA1VSN2R2	ELECTROLYTIC 35V 2.2	1	
C2046		ECEA1VSN2R2	ELECTROLYTIC 35V 2.2	1	
C2047		ECEA0JKS470	ELECTROLYTIC 6.3V 47	1	
C2048		ECEA1HKS010	ELECTROLYTIC 50V 1	1	
C2049		ECUX1H471KBN	CERAMIC 50V 470P	1	
C2050		ECQV1H393JZ	MYLAR 50V 0.039	1	
C2051		ECUX1E104ZFN	CERAMIC 25V 0.1	1	
C2052		ECEA1HKS010	ELECTROLYTIC 50V 1	1	
C2053		ECEA0GKS470	ELECTROLYTIC 4V 47	1	
C2054		ECEA0GKS470	ELECTROLYTIC 4V 47	1	
C2055		ECEA1HKS010	ELECTROLYTIC 50V 1	1	
C2056		ECEA1HKK010	ELECTROLYTIC 50V 1	1	
C2057		ECEA1HKS010	ELECTROLYTIC 50V 1	1	
C2058		ECEA1AKS470	ELECTROLYTIC 10V 47	1	
C2059		ECUX1H103ZFN	CERAMIC 50V 0.01	1	
C2060		ECUX1E104ZFN	CERAMIC 25V 0.1	1	
C2061		ECEA0JKS470	ELECTROLYTIC 6.3V 47	1	
C2062		ECEA0JKS470	ELECTROLYTIC 6.3V 47	1	
C2063		ECEA1CKS470	ELECTROLYTIC 16V 47	1	
C2064		ECEA1CKS470	ELECTROLYTIC 16V 47	1	
C2065		ECEA1HKSR47	ELECTROLYTIC 50V 0.47	1	
C2066		ECEA1HKSR47	ELECTROLYTIC 50V 0.47	1	
C2067		ECUX1E153KBN	CERAMIC 25V 0.015	1	
C2068		ECEA0GKS470	ELECTROLYTIC 4V 47	1	
C2069		ECEA0GKS470	ELECTROLYTIC 4V 47	1	

Ref.No.		Part No.	Part Name & Description	Pcs	Remarks
C2070		ECUX1E223ZFN	CERAMIC 25V 0.022	1	
C2071		ECEA0GKS470	ELECTROLYTIC 4V 47	1	
C2072		ECWM1H103JZ	MYLAR 50V 0.01	1	
			CONNECTORS		
P2001		VJP1608T	4P	1	
P2002		VJS1622	13P	1	
P2003		VJP1605T	12P	1	
P2004		VJP1599T	6P	1	
P2005		VJP1606T	2P	1	
P2006		VJP1596T	3P	1	
			VARIABLE RESISTORS		
VR2001		EVMLGGA00B15	100K	1	
VR2002		EVMLGGA00B15	100K	1	
			(SYSTEM CONTROL SECTION)		
			INTEGRATED CIRCUITS		
IC6001		AN6914S		1	
IC6002		MN1534VXQ		1	
IC6003		MN4066BS		1	
IC6004		AN6660		1	
IC6005		MN4503BS		1	
IC6006		MN1237A		1	
			TRANSISTORS		
Q6001		2SB709		1	(Q,R,S)
Q6002		2SD601		1	(Q,R,S)
Q6003		2SB710		1	(Q,R,S)
Q6004		2SB710		1	(Q,R,S)
Q6005		2SB710		1	(R,S)
Q6006		2SD636		1	(Q,R,S)
Q6007		2SD602		1	(Q,R,S)
Q6008		2SB779		1	(Q,R,S)
Q6009		2SD601		1	(Q,R,S)
Q6010		2SD601		1	(Q,R,S)
Q6011		2SB709		1	(Q,R,S)
Q6012		2SD601		1	(Q,R,S)
Q6013		2SD601		1	(Q,R,S)
			COMBINATION PARTS		
			(TRANSISTOR & RESISTOR)		
QR6001		UN2112		1	
QR6002		UN2212		1	
QR6004		UN2212		1	
QR6007		UN2212		1	
QR6009		UN2112		1	
QR6010		UN2212		1	
QR6011		UN2212		1	
QR6012		UN2212		1	
QR6013		UN2112		1	
QR6014		UN2112		1	
QR6015		UN2112		1	
QR6016		UN2112		1	
QR6018		UN2113		1	
QR6020		UN2113		1	
QR6021		UN2212		1	
QR6022		UN2212		1	
QR6023		UN2212		1	
QR6024		UN2212		1	
QR6025		UN2212		1	
QR6026		UN2212		1	
QR6027		UN2212		1	

Ref.No.		Part No.	Part Name & Description	Pcs	Remarks
QR6028		UN2212		1	
QR6029		UN2212		1	
QR6030		UN2212		1	
QR6031		UN2212		1	
			DIODES		
D6001		MA151K		1	
D6005		MA3075M		1	
D6006		MA3068H		1	
D6007		MA151WK		1	
D6008		MA151WA		1	
D6009		MA151WA		1	
D6010		MA151WA		1	
D6011		MA151WA		1	
D6012		MA151WA		1	
D6013		MA151K		1	
D6014		MA151K		1	
D6015		MA151K		1	
D6017		MA151K		1	
D6019		MA151WA		1	
D6020		MA151WA		1	
			RESISTORS		
R6001		ERJ6GCYJ332	CHIP 3.3K	1	
R6002		ERJ6GCYJ562	CHIP 5.6K	1	
R6003		ERJ6GCYJ102	CHIP 1K	1	
R6004		ERJ6GCYJ104	CHIP 100K	1	
R6005		ERJ6GCYJ102	CHIP 1K	1	
R6007		ERJ6GCYJ103	CHIP 10K	1	
R6008		ERJ6GCYJ103	CHIP 10K	1	
R6009		ERJ6GCYJ104	CHIP 100K	1	
R6010		ERJ6GCYJ563	CHIP 56K	1	
R6011		ERJ6GCYJ102	CHIP 1K	1	
R6012		ERJ6GCYJ563	CHIP 56K	1	
R6013		ERJ6GCYJ273	CHIP 27K	1	
R6014		ERJ6GCYJ683	CHIP 68K	1	
R6015		ERJ6GCYJ333	CHIP 33K	1	
R6016		ERJ6GCYJ683	CHIP 68K	1	
R6017		ERJ6GCYJ223	CHIP 22K	1	
R6018		ERJ6GCYJ184	CHIP 180K	1	
R6019		ERJ6GCYJ474	CHIP 470K	1	
R6020		ERX1SJ2R2	METAL 1/2W 2.2	1	
R6024		ERJ6GCYJ152	CHIP 1.5K	1	
R6025		ERJ6GCYJ152	CHIP 1.5K	1	
R6026		ERJ6GCYJ562	CHIP 5.6K	1	
R6028		ERJ6GCYJ182	CHIP 1.8K	1	
R6029		ERJ6GCYJ152	CHIP 1.5K	1	
R6030		ERJ6GCYJ182	CHIP 1.8K	1	
R6031		ERJ6GCYJ152	CHIP 1.5K	1	
R6033		ERJ6GCYJ103	CHIP 10K	1	
R6034		ERJ6GCYJ272	CHIP 2.7K	1	
R6035		ERJ6GCYJ222	CHIP 2.2K	1	
R6036		ERJ6GCYJ222	CHIP 2.2K	1	
R6037		ERJ6GCYJ102	CHIP 1K	1	
R6038		ERJ6GCYJ102	CHIP 1K	1	
R6039		ERJ6GCYJ104	CHIP 100K	1	
R6040		ERJ6GCYJ104	CHIP 100K	1	
R6041		ERJ6GCYJ562	CHIP 5.6K	1	
R6042		ERJ6GCYJ562	CHIP 5.6K	1	
R6043		ERJ6GCYJ562	CHIP 5.6K	1	
R6044		ERJ6GCYJ291	CHIP 290	1	
R6045		ERJ6GCYJ102	CHIP 1K	1	
R6046		ERJ6GCYJ103	CHIP 10K	1	
R6047		ERG1ANJ820	METAL 1W 82	1	
R6048		ERJ6GCYJ102	CHIP 1K	1	
R6049		ERJ6GCYJ103	CHIP 10K	1	
R6050		ERJ6GCYJ222	CHIP 2.2K	1	
R6051		ERJ6GCYJ222	CHIP 2.2K	1	
R6052		ERJ6GCYJ561	CHIP 560	1	
R6053		ERJ6GCYJ561	CHIP 560	1	
R6054		ERJ6GCYJ104	CHIP 100K	1	

Ref.No.		Part No.	Part Name & Description	Pcs	Remarks
R6056		ERJ6GCYJ104	CHIP 100K	1	
R6057		ERJ6GCYJ222	CHIP 2.2K	1	
R6058		ERJ6GCYJ222	CHIP 2.2K	1	
R6059		ERJ6GCYJ183	CHIP 18K	1	
R6060		ERJ6GCYJ100	CHIP 100	1	
R6061		ERJ6GCYJ682	CHIP 6.8K	1	
R6062		ERJ6GCYJ562	CHIP 5.6K	1	
R6063		ERJ6GCYJ270	CHIP 270	1	
R6064		ERJ6GCYJ103	CHIP 10K	1	
R6065		ERJ6GCYJ223	CHIP 22K	1	
R6066		ERJ6GCYJ563	CHIP 56K	1	
R6067		ERJ6GCYJ103	CHIP 10K	1	
R6068		ERJ6GCYJ105	CHIP 1M	1	
R6069		ERJ6GCYJ104	CHIP 100K	1	
R6070		ERJ6GCYJ223	CHIP 22K	1	
R6071		ERJ6GCYJ223	CHIP 22K	1	
R6072		ERJ6GCYJ104	CHIP 100K	1	
R6073		ERJ6GCYJ564	CHIP 560K	1	
R6074		ERJ6GCYJ223	CHIP 22K	1	
R6075		ERJ6GCYJ104	CHIP 100K	1	
R6076		ERJ6GCYJ334	CHIP 33K	1	
R6077		ERJ6GCYJ123	CHIP 12K	1	
R6078		ERJ6GCYJ103	CHIP 10K	1	
R6079		ERJ6GCYJ274	CHIP 270K	1	
R6080		ERJ6GCYJ104	CHIP 100K	1	
R6081		ERJ6GCYJ103	CHIP 10K	1	
R6082		ERJ6GCYJ104	CHIP 100K	1	
R6083		ERJ6GCYJ104	CHIP 100K	1	
R6084		ERJ6GCYJ103	CHIP 10K	1	
R6085		ERJ6GCYJ103	CHIP 10K	1	
R6086		ERJ6GCYJ103	CHIP 10K	1	
R6087		ERJ6GCYJ103	CHIP 10K	1	
R6088		ERJ6GCYJ683	CHIP 68K	1	
R6089		ERJ6GCYJ103	CHIP 10K	1	
R6090		ERJ6GCYJ103	CHIP 10K	1	
R6091		ERJ6GCYJ102	CHIP 1K	1	
R6092		ERJ6GCYJ102	CHIP 1K	1	
R6093		ERJ6GCYJ102	CHIP 1K	1	
			CAPACTIORS		
C6001		ECEA1EKS220	ELECTROLYTIC 25V 22	1	
C6002		ECUX1E104ZFN	CERAMIC 25V 0.1	1	
C6003		ECEA1CKS100	ELECTROLYTIC 16V 10	1	
C6004		ECEA1HKS2R2	ELECTROLYTIC 50V 2.2	1	
C6005		ECEA1HKS010	ELECTROLYTIC 50V 1	1	
C6006		ECUX1E104ZFN	CERAMIC 25V 0.1	1	
C6007		ECUX1E104ZFN	CERAMIC 25V 0.1	1	
C6008		ECUX1E104ZFN	CERAMIC 25V 0.1	1	
C6009		ECUX1H562KBN	CERAMIC 50V 5600P	1	
C6010		ECUX1H220JCN	CERAMIC 50V 22P	1	
C6011		ECUX1H103ZFN	CERAMIC 50V 0.01	1	
C6012		VCE0017		1	OR EECF5R5U473
C6013		ECEA1HKS010	ELECTROLYTIC 50V 1	1	
C6014		ECEA1HKS010	ELECTROLYTIC 50V 1	1	
C6015		ECUX1H180JCN	CERAMIC 50V 18P	1	
C6016		ECUX1H180JCN	CERAMIC 50V 18P	1	
C6017		ECUX1E104ZFN	CERAMIC 25V 0.1	1	
C6018		ECEA0JKS470	ELECTROLYTIC 6.3V 47	1	
C6019		ECUX1E104ZFN	CERAMIC 25V 0.1	1	
C6020		ECUX1H103ZFN	CERAMIC 50V 0.01	1	
C6021		ECEA0JKS470	ELECTROLYTIC 6.3V 47	1	
C6022		ECUX1E104ZFN	CERAMIC 25V 0.1	1	
C6023		ECQV1H104JZ	MYLAR 50V 0.1	1	
C6024		ECEA1AKS330	ELECTROLYTIC 100V 33	1	
			COILS		
L6001		VLQEL05F101K	100uH	1	
L6002		VLQEL05F101K	100uH	1	
			FILTERS		

Ref.No.		Part No.	Part Name & Description	Pcs	Remarks
FJ6001		VJR0174	RT TERMINAL	1	
FJ6002		VJR0174	RT TERMINAL	1	
			CRYSTAL OSCILLATOR		
X6001		VSX0086		1	
			CONNECTORS		
P6001		VJS1703		1	
P6002		VJP1244T	4P	1	
P6003		VJP1606T	2P	1	
P6004		VJP1607T		1	
P6005		VJP1242T	2P	1	
P6006		VJP1607R		1	
P6007		VJP1611T	7P	1	
P6008		VJP1616T	12P	1	
P6009		VJP1230T	3P	1	
P6010		VJP1600T	7P	1	
P6011		VJP1236T	9P	1	
P6012		VJP1603T	10P	1	
P6013		VJP1607T	3P	1	
			VARIABLE RESISTORS		
VR6001		EVMLGGA00B14	10K	1	
VR6002		EVMLGGA00B23	2K	1	
			MISCELLANEOUS		
		VJF0304	CLAMPER	1	
		VMX0965	INSULATION PLATE	1	
		VSCS073	SHIELD CASE	1	
		VSC1356	SHIELD CASE	1	
		VSC1357	SHIELD CASE	1	
		VSC1358	SHIELD CASE	1	
		VSC1538	SHIELD CASE	1	
		VMZ0651	SHIELD CASE BARRIER	1	
		VWJ0219	FLEXIBLE CONNECTOR	1	
	■	VEP03297A	LUMINANCE/CHROMINANCE		
			C.B.A.		
			(LUMINANCE SECTION)		
			P.C.B.ASS'Y		
IC3001		VEFY007		1	
			TRANSISTORS		
Q3001		2SC1621		1	
Q3002		2SD602		1	(Q,R,S)
Q3003		2SB710		1	(Q,R,S)
Q3004		2SD601		1	(Q,R,S)
Q3005		2SC2404		1	(C,D)
Q3006		2SC2404		1	(C,D)
Q3007		2SC1621		1	
Q3008		2SD602		1	(Q,R,S)
Q3009		2SB710		1	(Q,R,S)
Q3010		2SB709		1	(Q,R,S)
Q3011		2SD601		1	(Q,R,S)
Q3012		2SC1621		1	
Q3013		2SB709		1	(Q,R,S)
Q3014		2SD601		1	(Q,R,S)
Q3015		2SD601		1	(Q,R,S)

Ref.No.		Part No.	Part Name & Description	Pcs	Remarks
			COMBINATION PART		
			(TRANSISTOR & RESISTOR)		
QR3001		UN2212		1	
			DIODE		
D3001		MA151K		1	
			RESISTORS		
R3001		ERJ6GCYG561	CHIP 560	1	
R3002		ERJ6GCYG102	CHIP 1K	1	
R3003		ERJ6GCYJ103	CHIP 10K	1	
R3004		ERJ6GCYJ561	CHIP 560	1	
R3005		ERJ6GCYJ183	CHIP 18K	1	
R3006		ERJ6GCYJ183	CHIP 18K	1	
R3007		ERJ6GCYJ682	CHIP 6.8K	1	
R3008		ERJ6GCYJ152	CHIP 1.5K	1	
R3009		ERJ6GCYJ681	CHIP 680	1	
R3010		ERJ6GCYJ472	CHIP 4.7K	1	
R3011		ERJ6GCYG182	CHIP 1.8K	1	
R3012		ERJ6GCYG331	CHIP 330	1	
R3013		ERJ6GCYJ102	CHIP 1K	1	
R3014		ERJ6GCYJ102	CHIP 1K	1	
R3015		ERJ6GCYJ563	CHIP 56K	1	
R3016		ERJ6GCYJ473	CHIP 47K	1	
R3018		ERJ6GCYJ681	CHIP 680	1	
R3019		ERJ6GCYJ474	CHIP 470K	1	
R3020		ERJ6GCYJ394	CHIP 390K	1	
R3021		ERJ6GCYJ103	CHIP 10K	1	
R3022		ERJ6GCYJ562	CHIP 5.6K	1	
R3023		ERJ6GCYJ152	CHIP 1.5K	1	
R3024		ERJ6GCYJ562	CHIP 5.6K	1	
R3025		ERJ6GCYJ221	CHIP 220	1	
R3026		ERJ6GCYJ681	CHIP 680	1	
R3027		ERJ6GCYJ682	CHIP 6.8K	1	
R3028		ERJ6GCYJ222	CHIP 2.2K	1	
R3029		ERJ6GCYJ681	CHIP 680	1	
R3030		ERJ6GCYJ560	CHIP 56	1	
R3031		ERJ6GCYJ331	CHIP 330	1	
R3032		ERJ6GCYJ271	CHIP 270	1	
R3035		ERJ6GCYJ682	CHIP 6.8K	1	
R3036		ERJ6GCYJ682	CHIP 6.8K	1	
R3037		ERJ6GCYJ270	CHIP 27	1	
R3038		ERJ6GCYJ270	CHIP 27	1	
R3039		ERJ6GCYJ104	CHIP 100K	1	
R3040		ERJ6GCYJ472	CHIP 4.7K	1	
R3041		ERJ6GCYJ681	CHIP 680	1	
R3042		ERJ6GCYJ563	CHIP 56K	1	
R3043		ERJ6GCYJ392	CHIP 3.9K	1	
R3044		ERJ6GCYG103	CHIP 10K	1	
R3045		ERJ6GCYG272	CHIP 2.7K	1	
R3047		ERJ6GCYJ821	CHIP 820	1	
R3048		ERJ6GCYJ681	CHIP 680	1	
R3049		ERJ6GCYJ123	CHIP 12K	1	
R3050		ERJ6GCYJ750	CHIP 75	1	
R3051		ERJ6GCYG562	CHIP 5.6K	1	
R3052		ERJ6GCYG103	CHIP 10K	1	
R3053		ERJ6GCYJ392	CHIP 3.9K	1	
R3054		ERJ6GCYJ563	CHIP 56K	1	
R3055		ERJ6GCYJ682	CHIP 6.8K	1	
R3056		ERJ6GCYJ822	CHIP 8.2K	1	
R3057		ERJ6GCYJ471	CHIP 470	1	
R3058		ERJ6GCYJ152	CHIP 1.5K	1	
R3059		ERJ6GCYJ471	CHIP 470	1	
R3060		ERJ6GCYJ332	CHIP 3.3K	1	
R3061		ERJ6GCYJ823	CHIP 82K	1	
			CAPACITORS		
C3001		ECEA0JU221	ELECTROLYTIC 6.3V 220	1	

Ref.No.		Part No.	Part Name & Description	Pcs	Remarks
C3002		ECUX1H103ZFN	CERAMIC 50V 0.01	1	
C3003		ECEA0JU221	ELECTROLYTIC 6.3V 220	1	
C3004		ECUX1H030CCN	CERAMIC 50V 3P	1	
C3005		ECEA1EK2R2	ELECTROLYTIC 25V 2.2	1	
C3006		ECEA1EK3R3	ELECTROLYTIC 25V 3.3	1	
C3007		ECEA0GK220	ELECTROLYTIC 4V 22	1	
C3008		ECEA1EK3R3	ELECTROLYTIC 25V 3.3	1	
C3009		ECEA0JK220	ELECTROLYTIC 6.3V 22	1	
C3010		ECUX1H181JCN	CERAMIC 50V 180P	1	
C3011		ECUX1H680JCN	CERAMIC 50V 68P	1	
C3012		ECEA1EKS3R3	ELECTROLYTIC 25V 3.3	1	
C3013		ECEA1AKS330	ELECTROLYTIC 10V 3.3	1	
C3014		ECUX1H220JCN	CERAMIC 50V 22	1	
C3015		ECEA0JK221	ELECTROLYTIC 6.3V 220	1	
C3016		ECEA0GKS221	ELECTROLYTIC 4V 220	1	
C3017		ECEA0JKS220	ELECTROLYTIC 6.3V 22	1	
C3018		ECEA0JKS470	ELECTROLYTIC 6.3V 47	1	
C3019		ECUX1H150JCN	CERAMIC 50V 15P	1	
C3021		ECEA1CK100	ELECTROLYTIC 16V 10	1	
C3022		ECUX1H103ZFN	CERAMIC 50V 0.01	1	
C3023		ECEA1CKS100	ELECTROLYTIC 50V 10	1	
C3024		ECUX1H181JCN	CERAMIC 50V 180	1	
C3026		ECEA1HKS010	ELECTROLYTIC 50V 1	1	
C3027		ECUX1H681KBN	CERAMIC 50V 680P	1	
C3028		ECUX1E103KBN	CERAMIC 25V 0.01	1	
C3029		ECUX1H150JCN	CERAMIC 50V 15P	1	
C3030		ECUX1E103KBN	CERAMIC 25V 0.01	1	
C3031		ECUX1H103ZFN	CERAMIC 25V 0.01	1	
C3034		ECEA1CK100	ELECTROLYTIC 16V 10	1	
C3035		ECEV0JK220	ELECTROLYTIC 6.3V 22	1	
C3036		ECUX1H220JCN	CERAMIC 50V 22P	1	
C3037		ECEB1CK100	ELECTROLYTIC 16V 10	1	
C3038		ECEA1CKS100	ELECTROLYTIC 16V 10	1	
C3039		ECEA1CSN100	ELECTROLYTIC 16V 10	1	
C3040		ECUX1H681JN	CERAMIC 50V 680P	1	
C3042		ECUX1H103ZFN	CERAMIC 50V 0.01	1	
C3043		ECUX1H180JCN	CERAMIC 50V 18P	1	
			COILS		
L3001		VLQEL05F101K	100uH	1	
L3002		VLQ0163K150	15uH	1	OR ELJFA150KF
L3003		VLQ0163K150	12uH	1	OR ELJFA150KF
L3004		VLQEL05F101K	100uH	1	
L3007		VLQEL05F560K	56uH	1	
L3008		VLQEL05F101K	100uH	1	
L3009		VLQEL05F101K	100uH	1	
L3010		VLQ0163K120	12uH	1	OR ELJFA120KF
L3011		VLQEL05F101K	100uH	1	
L3012		VLQ0163J560	56uH	1	
L3013		VLQ0163J680	68uH	1	OR ELJFA680JF
			DELAY LINE		
DL3001		EFDVN645A43D		1	
			FILTERS		
FL3001		ELB4S002		1	
FL3002		ELB4P003		1	
FL3003		ELB4P003		1	
			CONNECTORS		
P3001		VJP1231T	4P	1	
P3002		VJP1595T	2P	1	
P3003		VJP1605R	12P	1	
P3004		VJP1601T	8P	1	

Ref.No.		Part No.	Part Name & Description	Pcs	Remarks
			VARIABLE RESISTORS		
VR3001		EVMLGGA00B23	2K	1	
			(CHROMINANCE SECTION)		
			P.C.B.ASS'Y		
IC8001		VEFC009		1	
			TRANSISTORS		
Q8001		2SB709		1	(Q,R,S)
Q8004		2SD601		1	(Q,R,S)
Q8006		2SC1621		1	(Q,R,S)
			COMBINATION PARTS		
			(TRANSISTOR & RESISTOR)		
QR8001		UN2213		1	
QR8002		UN2217		1	
QR8003		UN2217		1	
			RESISTORS		
R8001		ERJ6GCYJ562	CHIP 5.6K	1	
R8002		ERJ6GCYJ102	CHIP 1K	1	
R8004		ERJ6GCYJ821	CHIP 820	1	
R8005		ERJ6GCYJ122	CHIP 1.2K	1	
R8006		ERJ6GCYJ102	CHIP 1K	1	
R8008		ERJ6GCYJ271	CHIP 270	1	
R8013		ERJ6GCYJ471	CHIP 470	1	
R8015		ERJ6GCYJ821	CHIP 820	1	
R8016		ERJ6GCYJ472	CHIP 4.7K	1	
R8017		ERJ8GCYJ470	CHIP 47	1	
R8018		ERJ6GCYJ182	CHIP 1.8K	1	
R8021		ERJ6GCYJ561	CHIP 560	1	
R8022		ERJ6GCYJ681	CHIP 680	1	
R8024		ERJ6GCYJ105	CHIP 1M	1	
R8025		ERJ6GCYJ123	CHIP 12K	1	
R8026		ERJ6GCYJ562	CHIP 5.6K	1	
R8027		ERJ6GCYJ123	CHIP 12K	1	
R8028		ERJ6GCYJ103	CHIP 10K	1	
R8029		ERJ6GCYJ273	CHIP 27K	1	
R8030		ERJ6GCYJ562	CHIP 5.6K	1	
R8031		ERJ6GCYJ563	CHIP 56K	1	
R8032		ERJ6GCYJ272	CHIP 2.7K	1	
R8034		ERJ6GCYJ102	CHIP 1K	1	
R8035		ERJ6GCYJ561	CHIP 560	1	
			CAPACITORS		
C8001		ECUX1H103ZFN	CERAMIC 50V 0.01	1	
C8002		ECQB1H223JH	MYLAR 50V 0.022	1	
C8003		ECEA0JK470	ELECTROLYTIC 6.3V 47	1	
C8004		ECUX1H103ZFN	CERAMIC 50V 0.01	1	
C8005		ECEA0GK470	ELECTROLYTIC 4V 47	1	
C8006		ECUX1H030CCN	CERAMIC 50V 3	1	
C8007		ECUX1E102JN	CERAMIC 25V 1000P	1	
C8009		ECEA0JU471	ELECTROLYTIC 6.3V 470	1	
C8010		ECUX1H103ZFN	CERAMIC 50V 0.01	1	
C8011		ECEA0JK470	ELECTROLYTIC 6.3V 47	1	
C8012		ECUX1H103ZFN	CERAMIC 50V 0.01	1	
C8013		ECEA1CKK100	ELECTROLYTIC 16V 10	1	
C8014		ECEA1EKK2R2	ELECTROLYTIC 25V 2.2	1	
C8017		ECUX1H103ZFN	CERAMIC 50V 0.01	1	
C8021		ECUX1H103ZFN	CERAMIC 50V 0.01	1	
C8022		ECUX1H103ZFN	CERAMIC 50V 0.01	1	
C8024		ECUX1H103ZFN	CERAMIC 50V 0.01	1	

Ref.No.		Part No.	Part Name & Description	Pcs	Remarks
			COILS		
L8001		VLQ0163K150	15uH	1	OR ELJFA150KA
L8002		VLQEL05F101K	100uH	1	
L8003		VLQEL05F101K	100uH	1	
L8004		VLQEL05F470K	47uH	1	
			DELAY LINE		
DL8001		VLD0074		1	
			FILTERS		
FL8001		ELB4Q013		1	
FL8002		ELB4Q004		1	
FL8003		ELB4Q005		1	
			CRYSTAL OSCILLATOR		
X8001		VSX0132		1	
			MISCELLANEOU		
		VMX0853	CUSHION	1	
	■	VEP05073B	HEAD AMP C.B.A.		
			INTEGRATED CIRCUIT		
IC5001		AN3311K		1	
			TRANSISTORS		
Q5001		2SC2404		1	(C,D)
Q5002		2SD601		1	(Q,R,S)
Q5003		2SD601		1	(Q,R,S)
Q5004		2SD601		1	(Q,R,S)
Q5005		2SD601		1	(Q,R,S)
Q5006		2SD1328		1	(S)
Q5007		2SB709		1	(Q,R,S)
Q5010		2SD601		1	(Q,R,S)
Q5011		2SD1328		1	(S)
Q5012		2SB709		1	(Q,R,S)
Q5015		2SD601		1	(Q,R,S)
Q5016		2SD1328		1	(S)
Q5017		2SB709		1	(Q,R,S)
Q5020		2SD601		1	(Q,R,S)
Q5021		2SD1328		1	(S)
Q5022		2SB709		1	(Q,R,S)
			COMBINATION PARTS		
			(TRANSISTOR & RESISTOR)		
QR5001		UN2111		1	
QR5002		UN2213		1	
QR5003		UN2111		1	
QR5004		UN2213		1	
QR5005		UN2111		1	
QR5006		UN2213		1	
QR5007		UN2111		1	
QR5008		UN2213		1	

Ref.No.		Part No.	Part Name & Description	Pcs	Remarks
			RESISTORS		
R5001		ERJ6GCYJ332	CHIP 3.3K	1	
R5002		ERJ6GCYJ332	CHIP 3.3K	1	
R5003		ERJ6GCYJ332	CHIP 3.3K	1	
R5004		ERJ6GCYJ332	CHIP 3.3K	1	
R5006		ERJ6GCYJ182	CHIP 1.8K	1	
R5007		ERJ6GCYJ102	CHIP 1K	1	
R5008		ERJ6GCYJ681	CHIP 680	1	
R5009		ERJ6GCYJ102	CHIP 1K	1	
R5011		ERJ6GCYJ102	CHIP 1K	1	
R5012		ERJ6GCYJ121	CHIP 120	1	
R5013		ERJ6GCYJ102	CHIP 1K	1	
R5014		ERJ6GCYJ681	CHIP 680	1	
R5015		ERJ6GCYJ821	CHIP 820	1	
R5016		ERJ6GCYJ102	CHIP 1K	1	
R5017		ERJ6GCYJ103	CHIP 10K	1	
R5018		ERJ6GCYJ103	CHIP 10K	1	
R5019		ERJ6GCYJ102	CHIP 1K	1	
R5020		ERJ6GCYJ102	CHIP 1K	1	
R5021		ERJ6GCYJ220	CHIP 22	1	
R5022		ERJ6GCYJ332	CHIP 3.3K	1	
R5024		ERJ6GCYJ332	CHIP 3.3K	1	
R5025		ERJ6GCYJ332	CHIP 3.3K	1	
R5026		ERJ6GCYJ222	CHIP 2.2K	1	
R5027		ERJ6GCYJ152	CHIP 1.5K	1	
R5028		ERJ6GCYJ272	CHIP 2.7K	1	
R5031		ERJ6GCYJ220	CHIP 22	1	
R5032		ERJ6GCYJ332	CHIP 3.3K	1	
R5034		ERJ6GCYJ332	CHIP 3.3K	1	
R5035		ERJ6GCYJ332	CHIP 3.3K	1	
R5036		ERJ6GCYJ222	CHIP 2.2K	1	
R5037		ERJ6GCYJ152	CHIP 1.5K	1	
R5038		ERJ6GCYJ272	CHIP 2.7K	1	
R5041		ERJ6GCYJ220	CHIP 22	1	
R5042		ERJ6GCYJ332	CHIP 3.3K	1	
R5044		ERJ6GCYJ332	CHIP 3.3K	1	
R5045		ERJ6GCYJ332	CHIP 3.3K	1	
R5046		ERJ6GCYJ222	CHIP 2.2K	1	
R5047		ERJ6GCYJ152	CHIP 1.5K	1	
R5048		ERJ6GCYJ272	CHIP 2.7K	1	
R5051		ERJ6GCYJ220	CHIP 22	1	
R5052		ERJ6GCYJ332	CHIP 3.3K	1	
R5054		ERJ6GCYJ332	CHIP 3.3K	1	
R5055		ERJ6GCYJ332	CHIP 3.3K	1	
R5056		ERJ6GCYJ222	CHIP 2.2K	1	
R5057		ERJ6GCYJ152	CHIP 1.5K	1	
R5058		ERJ6GCYJ272	CHIP 2.7K	1	
			VARIABLE RESISTOR		
VR5001		EVMLGGA00B13	1K	1	
			CAPACITORS		
C5001		ECSF1CE105	TANTALUM 16V 1	1	
C5002		ECSF1CE105	TANTALUM 16V 1	1	
C5003		ECSF1CE105	TANTALUM 16V 1	1	
C5004		ECSF1CE105	TANTALUM 16V 1	1	
C5005		ECEA1CKK100	ELECTROLYTIC 16V 10	1	
C5006		ECEA1CKK100	ELECTROLYTIC 16V 10	1	
C5007		ECEA1CKK100	ELECTROLYTIC 16V 10	1	
C5008		ECEA1CKK100	ELECTROLYTIC 16V 10	1	
C5009		ECUX1H101JCN	CERAMIC 50V 100P	1	
C5010		ECUX1H101JCN	CERAMIC 50V 100P	1	
C5011		ECUX1H101JCN	CERAMIC 50V 100P	1	
C5012		ECUX1H101JCN	CERAMIC 50V 100P	1	
C5013		ECUX1H103ZFN	CERAMIC 50V 0.01	1	
C5014		ECUX1H103ZFN	CERAMIC 50V 0.01	1	
C5015		ECUX1H103ZFN	CERAMIC 50V 0.01	1	
C5016		ECUX1H103ZFN	CERAMIC 50V 0.01	1	
C5017		ECEA0JKS470	ELECTROLYTIC 6.3V 47	1	
C5018		ECUX1H270JCN	CERAMIC 50V 27P	1	
C5019		ECUX1H391JN	CERAMIC 50V 390P	1	

Ref.No.		Part No.	Part Name & Description	Pcs	Remarks
C5020		ECUX1H151JCN	CERAMIC 50V 150P	1	
C5021		ECEA1HKK010	ELECTROLYTIC 50V 1	1	
C5022		ECUX1H820JCN	CERAMIC 50V 82P	1	
C5023		ECUX1H330JCN	CERAMIC 50V 33P	1	
C5024		ECUX1H103ZFN	CERAMIC 50V 0.01	1	
C5025		ECSF1VE154	TANTALUM 35V 0.15	1	
C5026		ECUX1E103KBN	CERAMIC 25V 0.01	1	
C5028		ECUX1E103KBN	CERAMIC 25V 0.01	1	
C5029		ECUX1H390JCN	CERAMIC 50V 39P	1	
C5030		ECEA0JKS101	ELECTROLYTIC 6.3V 100	1	
C5031		ECUX1H103ZFN	CERAMIC 50V 0.01	1	
C5032		ECUX1E104ZFN	CERAMIC 25V 0.1	1	
C5035		ECUX1H101JCN	CERAMIC 50V 100P	1	
C5036		ECUX1H101JCN	CERAMIC 50V 100P	1	
C5037		ECUX1H101JCN	CERAMIC 50V 100P	1	
C5038		ECUX1H101JCN	CERAMIC 50V 100P	1	
C5039		ECUX1E473ZFN	CERAMIC 25V 0.047	1	
C5040		ECUX1E473ZFN	CERAMIC 25V 0.047	1	
C5041		ECUX1E473ZFN	CERAMIC 25V 0.047	1	
C5042		ECUX1E473ZFN	CERAMIC 25V 0.047	1	
C5043		ECUX1H103ZFN	CERAMIC 50 0.01	1	
			COILS		
L5001		VLF0365		1	
L5002		VLF0365		1	
L5003		VLF0365		1	
L5004		VLF0365		1	
L5005		VLQ0163J330	33uH	1	
L5006		VLQ0163K180	18uH	1	
L5007		VLQEL05F151K	150uH	1	
L5008		VLQ0163J150	15uH	1	
L5009		VLQEL05F101K	100uH	1	
L5010		VLQEL05F101K	100uH	1	
L5011		VLQ0163K220	22uH	1	
L5012		VLQEL05F681K	680uH	1	
			FILTERS		
FL5001		ELB4P001		1	
			CONNECTORS		
P5001		VJP1237T	10P	1	
P5002		VJP1601T	8P	1	
P5003		VJP1599T	6P	1	
	■	VEP04131B	AUDUO C.B.A.		
			INTEGRATED CIRCUITS		
IC4001		uPC1513G		1	
IC4002		uPC1514G		1	
IC4003		M5201L		1	
			TRANSISTORS		
Q4001		2SD602		1	(R,S)
Q4002		2SD601		1	(Q,R,S)
Q4003		2SD1030		1	(S)
			DIODE		
D4001		MA151A		1	

Ref.No.		Part No.	Part Name & Description	Pcs	Remarks
			RESISTORS		
R4001		ERJ6GCYJ100	CHIP 10	1	
R4002		ERJ6GCYJ183	CHIP 18K	1	
R4003		ERJ6GCYJ151	CHIP 150	1	
R4004		ERJ6GCYJ184	CHIP 180K	1	
R4005		ERJ6GCYJ332	CHIP 3.3K	1	
R4006		ERJ6GCYJ122	CHIP 1.2K	1	
R4008		ERJ6GCYJ333	CHIP 33K	1	
R4010		ERJ6GCYJ822	CHIP 8.2K	1	
R4011		ERJ6GCYJ682	CHIP 6.8K	1	
R4012		ERJ6GCYJ333	CHIP 33K	1	
R4013		ERJ6GCYJ105	CHIP 1M	1	
R4014		ERJ6GCYJ101	CHIP 100	1	
R4015		ERJ6GCYJ122	CHIP 1.2K	1	
R4016		ERJ6GCYJ153	CHIP 15K	1	
R4017		ERJ6GCYJ103	CHIP 10K	1	
R4018		ERJ6GCYJ473	CHIP 47K	1	
R4019		ERJ6GCYJ103	CHIP 10K	1	
R4020		ERJ6GCYJ273	CHIP 27K	1	
R4021		ERJ6GCYJ682	CHIP 6.8K	1	
R4022		ERJ6GCYJ473	CHIP 47K	1	
R4023		ERJ6GCYJ473	CHIP 47K	1	
R4024		ERJ6GCYJ124	CHIP 120K	1	
R4025		ERJ6GCYJ563	CHIP 56K	1	
R4026		ERJ6GCYJ123	CHIP 12K	1	
R4027		ERJ6GCYJ273	CHIP 27K	1	
R4028		ERJ6GCYJ681	CHIP 680	1	
R4029		ERJ6GCYJ124	CHIP 120K	1	
R4030		ERDS2TJ273	27K	1	
R4031		ERJ6GCYJ561	CHIP 560	1	
R4032		ERJ6GCYJ561	CHIP 560	1	
R4033		ERJ6GCYJ122	CHIP 1.2K	1	
R4034		ERJ6GCYJ122	CHIP 1.2K	1	
R4035		ERDS2TJ101	100	1	
R4036		ERDS2TJ154	150K	1	
R4037		ERJ6GCYJ472	CHIP 4.7K	1	
R4038		ERJ6GCYJ223	CHIP 22K	1	
R4040		ERJ6GCYJ8R2	CHIP 8.2	1	
			CAPACITORS		
C4001		ECEA1AK101	ELECTROLYTIC 10V 100	1	
C4002		ECUX1H122KBN	CERAMIC 50V 1200P	1	
C4003		ECEA1HKL010	ELECTROLYTIC 50V 1	1	
C4004		ECUX1H101JN	CERAMIC 50V 100P	1	
C4005		ECEA0JK470	ELECTROLYTIC 6.3V 47	1	
C4006		ECQB1H333JH	MYLAR 50V 0.033	1	
C4007		ECUX1H822KBN	CERAMIC 50V 8200P	1	
C4008		ECEA0JK220	ELECTROLYTIC 6.3V 22	1	
C4009		ECEA1HK010	ELECTROLYTIC 50V 1	1	
C4010		ECUX1H271JCM	CERAMIC 50V 270P	1	
C4011		ECEA0JK470	ELECTROLYTIC 6.3V 47	1	
C4012		ECEA0JK220	ELECTROLYTIC 6.3V 22	1	
C4013		ECUX1E104ZFN	CERAMIC 25V 0.01	1	
C4014		ECEA0JK470	ELECTROLYTIC 6.3V 47	1	
C4015		ECEA1VKS4R7	ELECTROLYTIC 35V 4.7	1	
C4016		ECQB1H273JH	MYLAR 50V 0.027	1	
C4017		ECEA1HK010	ELECTROLYTIC 50V 1	1	
C4018		ECEA1AK330	ELECTROLYTIC 10V 33	1	
C4019		ECUX1H472KBN	CERAMIC 50V 4700P	1	
C4020		ECRHA090N11		1	
C4021		ECQP1152JZ	MYLAR 100V 1500P	1	
C4022		ECEA1AK101	ELECTROLYTIC 10V 100	1	
C4023		ECUX1H153KBM	CERAMIC 50V 0.015	1	
C4024		ECUX1H22KBN	CERAMIC 50V 2200P	1	
C4025		ECEA1HK2R2	ELECTROLYTIC 50V 2.2	1	
C4026		ECEA0GK470	ELECTROLYTIC 4V 47	1	
C4028		ECEA1HK2R2	ELECTROLYTIC 50V 2.2	1	
C4029		ECQV1H154JZ	MYLAR 50V 0.15	1	
C4030		ECEA0JK101	ELECTROLYTIC 6.3V 100	1	
C4031		ECEA0JK101	ELECTROLYTIC 6.3V 100	1	
C4032		ECQB1H682JH	MYLAR 50V 6800P	1	
C4033		ECWM1H472JZ	MYLAR 50V 4700P	1	

Ref.No.		Part No.	Part Name & Description	Pcs	Remarks
			COILS		
L4001		VLQEL05F101K	100uH	1	
L4002		VLQEL05F101K	100uH	1	
L4003		ELTMR822JB	8.2mH	1	
L4004		ELTMR153KB	15mH	1	
			TRANSFORMERS		
T4001		EIQ7QE002B		1	
			CONNECTORS		
P4001		VJP1598T	5P	1	
P4002		VJP1598T	5P	1	
P4003		VJP1596T	3P	1	
P4004		VJP1600T	7P	1	
			VARIABLE RESISTORS		
VR4001		EVMLGGA00B23	2K	1	
	■	VEP06311A	OPERATION (I) C.B.A.		
			DIODES		
D6101		MA165		1	
D6102		MA165		1	
D6103		MA165		1	
D6104		MA165		1	
D6105		MA165		1	
D6106		MA165		1	
			RESISTORS		
R6101		ERDS2TJ561	560	1	
R6102		ERDS2TJ561	560	1	
R6103		ERDS2TJ561	560	1	
R6104		ERDS2TJ561	560	1	
R6105		ERDS2TJ561	560	1	
			SWITCHES		
SW6101		EVQQL407K		1	
SW6102		EVQQL407K		1	
SW6103		EVQQL407K		1	
SW6104		EVQQL407K		1	
SW6105		EVQQL407K		1	
SW6106		EVQQL407K		1	
			MISCELLANEOU		
		KL02	LED SPACER	2	
	■	VEP06312A	OPERATION (II) C.B.A.		
			DIODES		
D6201		MA165		1	

Ref.No.		Part No.	Part Name & Description	Pcs	Remarks
D6202		EBR3902S	LED	1	
D6203		EBR3902S	LED	1	
			RESISTOR		
R6201		ERDS2TJ561	560	1	
			SWITCHES		
SW6201		EVQQSB04B		1	
SW6202		EVQQSB04B		1	
			CONNECTOR		
P6201		VJP1247T	7P	1	
	■	VEP06314A	OPERATION (III) C.B.A.		
			DIODES		
D6501		MA165		1	
D6502		MA165		1	
D6503		MA165		1	
D6504		MA165		1	
D6505		MA165		1	
			VARIABLE RESISTOR		
VR6501		EVLBYAA00B15	TRACKING VR 100K	1	
			SWITCHES		
SW6501		EVQQSB04B		1	
SW6502		EVQQSB04B		1	
SW6503		EVQQSB04B		1	
SW6504		EVQQSB04B		1	
SW6505		EVQQSB04B		1	
			CONNECTORS		
P6501		VJP1606T		1	
				1	
	■	VJB00E39	EJECT C.B.		
			DIODES		
D6401		MA165		1	
			SWITCHES		
SW6401		EVQQSB04B		1	
	■	VJB00G18	FUSE CONNECTION C.B.		

Ref.No.		Part No.	Part Name & Description	Pcs	Remarks
			CONNECTORS		
P1508		VJP1242R	2P	1	
P1509		VJP1232R	5P	1	
P1510		VJP1230T	3P	1	
P1511		VJP1229T	2P	1	
			MISCELLANEOU		
		TJC6320	FUSE HOLDER	2	<!>
	■	VJB26042	START/STOP C.B.		
			SWITCH		
		VSP0148		2	
	■	VJB00F70	MECHANISM CONNECTION C.B.		
			PHOTO INTERRUPTER		
Q1501		ON2160		1	
			CONNECTORS		
P1501		VJS1702	10P	1	
P1502		VJP1229T	2P	1	
P1504		VJP1595T	2P	1	
P1505		VJP1595R	2P	1	
P1506		VJP1229R	2P	1	
	■	VJB00F71	FE HEAD C.B.		
			TRANSISTOR		
Q1504		2SC2603		1	
			RESISTOR		
R1501		ERDS2TJ333	3.3K	1	
			CAPACITORS		
C1501		ECKF1H472ZF	CERAMIC 50V 4700	1	
C1502		ECEA1CKS100	ELECTROLYTIC 16V 10	1	
C1503		ECQV1H333JZ	MYLAR 50V 0.033	1	
C1504		VCYE1C103MR1	CEMICONDUCTOR 16V 0.01	1	
			COIL		
L1502		VLQEL05F221K	220uH	1	
			TRANSFORMER		
T1501		VTD0014B		1	
	■	VJB00F66	REMOTE CONTROL JACK C.B.		

Ref.No.		Part No.	Part Name & Description	Pcs	Remarks
			JACK		
J1501		VJJ0125		1	
			DIODE		
D1501		MA4100		1	
			COIL		
L1501		VLQEL05F221K	220uH	1	
			CONNECTOR		
P1507		VJP1230T	3P	1	

Ref.No.		Part No.	Part Name & Description	Pcs	Remarks

3. VW-KM3E Mechanical Replacement Parts List

Note:1.* Be sure to make your orders of replacement parts according to this list.
2. IMPORTANT SAFETY NOTICE
Components identified with the mark <!> have the special characteristics for safety. When replacing any of these components, use only the same type.

Ref.No.		Part No.	Part Name & Description	Pcs	Remarks
1		VKM0620	Top Case	1	
2		VKM0597	Bottom Case	1	
3		VMA6773	Support Angle	1	
4		VQF1633	Fan Bag Kit	1	
5		VPG2461	Packing Case	1	
6		VPN1390	Pad	1	
7		VEK2645	14pin Multi Cable	1	
8		VEJ0472	Input Terminal	1	

4. VW-KM3E Electrical Replacement Parts List

Note: 1. * Be sure to make your orders of replacement parts according to this list.

2. IMPORTANT SAFETY NOTICE
Components identified with the mark <!> have the special characteristics for safety. When replacing any of these components, use only the same type.

3. Unless otherwise specified,
All resistors are in OHMS ,K=1,000 OHMS. All capacitors are in MICROFARADS(uf),P=uuF.

4. The P.C.Board units marked width'▮'show below the main assembled parts.

Ref.No.		Part No.	Part Name & Description	Pcs	Remarks
			Printed Circuit Board		
			Assembly		
		VEP23041B	Main C.B.A.	1	
		VJB20197	Micro SW C.B.	1	
		VEJ0472	Input Terminal	1	
			Regulator IC		
RG301		AN78L09		1	
			Transistors		
Q301		2SD636		1	(Q,R,S)
Q302		2SC2206		1	(A,B,C)
Q303		2SB641		1	(Q,R,S)
Q304,305		2SD636		2	(Q,R,S)
Q801		2SD636		1	(Q,R,S)
Q802		2SC2206		1	(A,B,C)
Q803		2SD636		1	(Q,R,S)
			Diode		
D301		MA165		1	
			Resistors		
R301		ERDS2TJ680	68	1	
R302		ERDS2TJ563	56K	1	
R303		ERDS2TJ273	27K	1	
R304-306		ERDS2TJ102	1K	3	
R307		ERDS2TJ563	56K	1	
R308		ERDS2TJ153	15K	1	
R309		ERDS2TJ222	2.2K	1	
R310		ERDS2TJ152	1.5K	1	
R311		ERDS2TJ392	3.9K	1	
R312		ERDS2TJ102	1K	1	
R313		ERDS2TJ471	470	1	
R314		ERDS2TJ105	1M	1	
R315		ERDS2TJ683	68K	1	
R316		ERDS2TJ273	27K	1	
R317		ERDS2TJ102	1K	1	
R318		ERDS2TJ680	68	1	
R801		ERDS2TJ563	56K	1	
R802		ERDS2TJ273	27K	1	
R803-805		ERDS2TJ102	1K	3	
R806,807		ERDS2TJ563	56K	2	
R808		ERDS2TJ821	820	1	
R809		ERDS2TJ102	1K	1	
R810		ERDS2TJ271	270	1	
R811		ERDS2TJ563	56K	1	
R812		ERDS2TJ273	27K	1	
R813		ERDS2TJ102	1K	1	
R814		ERDS2TJ680	68	1	
			Capacitors		
C301		ECEA0JK220	Electrolytic 6.3V 22	1	
C302		ECKF1H103ZF	Ceramic 50V 0.01	1	
C303		ECEA1CK470	Electrolytic 16V 47	1	

Ref.No.		Part No.	Part Name & Description	Pcs	Remarks
C304		ECEA0JK470	Electrolytic 6.3V 47	1	
C305		ECEA1CK100	Electrolytic 16V 10	1	
C306		ECQV1H334JZ	Mylar 50V 0.33	1	
C307		ECQV1H104JZ	Mylar 50V 0.1	1	
C801-805		ECKF1H103ZF	Ceramic 50V 0.01	5	
C806		ECEA1CK470	Electrolytic 16V 47	1	
			Coils		
L301		VLQEL05F101K	100uH	1	
L801		VLQEL05F101K	100uH	1	
			Filters		
FL301		ELB4R009	(Y,L.P.F)	1	
FL801		ELB4Q018	(C,B.P.F)	1	
			Connectors		
P301		VJP1229T	2P	1	
P302		VJP1231T	4P	1	
P303		VJP1230T	3P	1	
P304		VJP1231T	4P	1	
P305,306		VJP1230T	3P	2	